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I.—OUR SPACE-CONSCIOUSNESS: A REPLY.

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SINCE the second edition of *The Principles of Psychology* was published, there have come, from adherents of Kant, some criticisms on the doctrine contained in §§ 326—335. They have adopted a common controversial practice, of which the formula is—When you cannot meet an issue that has been raised, raise a new issue. Instead of defending the Kantian doctrine against my attack, they have made a counter-attack. I set forth six objections. Besides showing that on the very first page of the *Critique of Pure Reason*, Kant so changes the meaning of a word as to vitiate the rest of his argument; and besides showing the untruth of his assertion, currently accepted, that Space is a form of sense-intuition at large (for it is a form only of the intuitions derived through touch and sight); I have pointed out that the Kantian hypothesis involves four impossibilities of thought (*Prin. of Psych.*, § 399).

Though it would, I think, be time enough to answer my critics after my criticisms have been answered, or at any rate, after some attempt has been made to answer them; yet it appears needful, without waiting longer, to rebut the arguments used against me. By nine out of ten, absence of

reply is supposed to prove inability to reply. Hence I have decided to pause a moment for the purpose of showing that while there has been no defence against my attack, the counter-attacks fail.

Of such counter-attacks the most elaborate is that made by Prof. Watson, of the Queen's University, Canada, in *Kant and his English Critics;* and as I am not aware that any arguments have been used by others which he has not used, I may fitly limit my attention to the chapters in which he seeks to refute my views. Had I any wish to avoid joining issue on essential points, I should, indeed, have valid reasons for doing so, of which here are some.

When dealing with the beliefs held by me concerning certain of our ultimate consciousnesses, and more especially our consciousness of Space, Prof. Watson says on p. 262, that he confines himself "mainly to the third chapter of the second part of Mr. Spencer's *First Principles*": the word "mainly," not implying that he takes account of other works of mine, but merely that he takes account of other passages in *First Principles.* Now in the chapter he professedly criticises, there is a foot-note stating that the justification for the doctrine there briefly set forth as part of a general argument, will be found in the *Principles of Psychology,* where the full exposition of it occupies a chapter—or rather two chapters; for the chapter on "The Conception of Body as presenting Statical Attributes," contains the first part of the argument which is brought to a conclusion in the next chapter on "The Conception of Space". This full exposition occupying 42 pages, Prof. Watson deliberately ignores: preferring to base his criticism on a brief summary occupying 3 pages, which does not profess to contain the justification, but only the conclusion! An author dealt with after this fashion would, I think, be warranted in disregarding the attack.

Moreover I might, with good ground, conclude that it is useless to discuss a philosophical question with one who professes to have a consciousness of something which I find it impossible to frame any consciousness of. If two contestants give different meanings to the words and phrases used, and, still more, if one sees a meaning where the other sees none, there is no chance of an agreement between them. Prof. Watson says,—"In intelligent experience space and time are not posterior, but prior, to co-existing and successive objects, as undifferentiated space is prior to positions—*i.e.*, limitations of space" (p. 273). Now when I look into

my consciousness to find the something described as undifferentiated space, or space as preceding in order of existence all positions, I find nothing whatever answering to it. Unless I suppose Prof. Watson is using words to which he attaches no ideas, I must suppose that he can think of this undifferentiated space in which there are no positions; and as I am utterly incapable of doing this, there does not exist between us that common ground which is needful before argument can be carried on to any purpose. Were I to use the phrase "undifferentiated space," as defined by Prof. Watson, I should be using what is, to my mind, though not it seems to his, one of those eviscerated phrases which will no more help to lay hold of a truth than a stuffed greyhound will catch a hare.

Again, there is the question of a criterion of truth, in the absence of which, as accepted by both of two disputants, an argument may be stopped at any point, or its conclusion rejected, by simple denial. I have myself propounded and defended such a criterion; and though there have been criticisms on my argument, I have not yet met with any other proposed criterion. The assumption seems to be that discussion may profitably be carried on while the parties to it have not come to an agreement respecting the character of a proposition which must be accepted, as distinguished from one which may be denied. Prof. Watson discusses the universal postulate, and raises various objections, concerning the validity of which I need here say nothing. I have merely to point out that he proposes no criterion in its stead. If, of two who were negotiating a commercial transaction, one offered security and asked for security in return, while the other, objecting to the security offered, declined to make any arrangements by which evasion of the contract should be guarded against, the first of the two would very probably drop the negotiation. And, in like manner, I might properly decline discussion with one who refused to abide by a proposed guarantee of validity, and failed to offer one himself.

Yet another justification for passing over Prof. Watson's criticisms would be that he refuses to recognise, as a possible problem, the problem I deal with; since, by assuming that knowledge has at the beginning the same characters which it has at the end, he tacitly denies the process of development. He says:—"Individual feelings, however numerous, cannot possibly account for the knowledge of extended things or of extension since such feelings are assumed to be destitute of that universality which is the condition of any

knowledge whatever" (p. 272). Does Prof. Watson think that at the moment the newly-born infant first closes its lips round the nipple, it knows its sensations in connexion with their respective universals? If he does not think this, then he must admit that in the infant what he calls knowledge slowly emerges out of something which does not answer to his definition of knowledge. If, however he has the courage of his opinions, and affirms that consciousness of "that universality which is the condition of any knowledge whatever" precedes in the infant the reception of its first sensations; then, as I say, no good can come of an argument between one who proposes to trace the genesis of intelligence, and one who holds that intelligence did not acquire by degrees the structure which we recognise in it, but had such structure at the outset.

This tacit assumption that what we now distinguish as thought, has always had the traits which are conspicuous in it, and this tacit ignoring of the very hypothesis to be discussed, that these traits have arisen in the course of a slow genesis, crop up continually throughout Prof. Watson's criticisms. For example, he says:—"It is not possible to be conscious of events as uniformly sequent, without being conscious of substances as dependent upon and influencing each other; or, to take experience at an earlier stage, it is not possible to think of events as following upon each other in time, apart from the thought of things as co-existing in space" (p. 270). This is an implied repetition of the Kantian dogma respecting forms of intuition, which is true only of certain classes of intuitions. For, as I have elsewhere shown (*Prin. of Psy.*, § 399), neither sounds nor odours have space for their form of intuition. If Prof. Watson does not perceive that, were he without the knowledge obtained through touch and vision, he could be conscious of successive sounds "apart from the thought of things as co-existing in space"; and if he does not perceive that even now he can be thus conscious of a melody which persists in intruding upon consciousness; then he affords further evidence that our two consciousnesses differ so much that comparison of experiences can lead to no definite result.

Contending that the consciousness of space is inseparable from the first experiences of things in space, Prof. Watson says:—"We are told of 'impressions of resistance,' and of 'muscular adjustments'. Now, an impression of resistance, is not a mere feeling, but the conception of an object as resisting, and such a conception involves a construction of reality by relations of thought. Similarly, 'muscular adjust-

ments' pre-suppose a knowledge of the muscular system, or, at least, of the body as it exists for common consciousness and, here again, relations of thought are inconsistently attributed to mere feeling" (p. 275). As before, we see that Kant's defenders insist on carrying with them the contents of developed consciousness when interpreting undeveloped consciousness; or, in other words, tacitly deny the possibility of a consciousness which does not contain the chief components of consciousness as it exists in ourselves. As already shown, their method of studying the evolution of thought is that of assuming that thought is complete in essentials at the outset; and, pursuing this method, they do not admit the separability of states of consciousness which are extremely coherent, though even in ourselves it is still possible for us to separate them. For an impression of resistance is a feeling quite distinguishable from the perception or idea of a thing producing it, and may be conceived as occurring in a rudimentary consciousness without any idea of a causing object. Hamilton, while recognising the distinction between sensation and perception, says the two always co-exist, though in inverse intensities. As I have pointed out (*Prin. of Psy.*, § 353), the law, rightly stated, is that sensation and perception tend to "exclude each other with degrees of stringency which vary inversely": the illustration which here concerns us being that the sensation of resistance, when it rises to great intensity, monopolises consciousness. After pressing the finger gently against an angle, and noting that the shape of the angle is the subject of thought, and after observing that as the pressure increases the sensation more and more solicits attention, until when the pressure becomes extreme the sensation alone is attended to, any one may perceive that, even in the developed consciousness, the subjective state produced is separable in thought from the objective producer; and may then conceive an undeveloped consciousness, not yet made coherent by organisation of experiences, in which a presentation of the one may occur without idea of the other.

Thus, as I have said, the conditions to be observed in carrying on profitable discussion are so inadequately fulfilled, that entrance into it might be held useless. But though, for the reasons that Prof. Watson ignores the specific statement of the views he combats, and that he misconceives the problem I have proposed to deal with, and that he professes to have ideas which I cannot frame, and that he neither accepts my criterion of truth nor proposes one of his own—though I might, for these reasons, fitly decline all controversy as futile; yet as I

have said, readers unaware of these reasons will, I doubt not, in this case as in other such cases, conclude that arguments which have not been refuted are valid arguments. I therefore feel it necessary to show that they are not valid.

Past culture, and in great measure the culture received at present, has not familiarised men with the idea of transformation. Only in our own times have the world, and man, and the products of human activity, come to be contemplated as results of a continuous becoming; and even still, this way of looking at things is alien to the minds of all but a few—alien in the sense that it is not constant enough to affect their thinking. One consequence is an inability to believe that something now known as having certain conspicuous traits, can ever have existed under a form in which no such traits were discernible. The difficulty felt is like that felt by the old biologists when they adopted the theory of *emboîtement*—the theory that in the germ of every living creature, the future adult exists in little; and that within this exist the immeasurably more minute forms of adults which will eventually descend from it; and so on *ad infinitum*: the reason for accepting this theory being that it was impossible to understand how a complex structure like that of the human body, could have arisen out of something which had no structure. An analogous difficulty is at present felt by the disciples of Kant. These cannot imagine how it is possible that our space-consciousness can have arisen out of that which was not originally a space-consciousness. Yet a cursory survey shows that each of the sciences yields examples of transitions which connect, by insensible gradations, things having apparently no kinship whatever.

Mathematics furnishes us with one. A circle and a straight line seem absolutely unrelated; and yet we may pass from the one to the other by an unbroken movement. Cut a cone at right angles to its axis, and the result is a circle. Incline the cutting plane in the slightest degree, and the circle becomes an ellipse. Increase the inclination, and the ellipse grows more excentric, until it passes into a parabola as the parallelism to the side becomes complete. Further rotation of the plane turns the parabola into an hyperbola, which changes its form with every change of position of the plane; until, when the plane, emerging from the opposite side of the cone, becomes a tangent plane, the two sides of the hyperbola coalesce, and become a straight line. Though the transition may be more simply made, yet this best shows the variety of figures which are united as members of a continuous series.

Take next a case from Physics. To one of the uneducated, and, indeed, to one whose knowledge is limited to that given by ordinary education, nothing could seem more absurd than the assertion that heat and motion are but different forms of the same thing. Motion, he would say, rapid or slow as you may make it, must ever remain motion; and heat, increase or decrease its intensity in whatever degree you please, must always remain heat. Nevertheless, their reciprocal convertibility is a proved truth. When a bullet placed on an anvil is stuck by a hammer, what disappears as arrested motion of the hammer reappears as increased heat of the lead. When steam is let into a cylinder, the heat it loses as it expands is transformed into the motion of its own mass and sundry masses of iron. Though molecular motion is intrinsically of the same nature as molar motion, yet the unaggregated form in which it exists in the one case affects our senses in so utterly different a manner from the aggregated form in which it exists in the other case, that it appears to common sense inconceivable that the two are but different modes of one.

Chemistry furnishes countless instances of transformations from which qualities that appear radically different result. Here is a piece of phosphorus, semi-transparent, waxy-looking, luminous in the dark, showing a powerful affinity for oxygen, burning flesh which it touches, and hence acting as a poison when swallowed. Expose it for a certain time to the temperature of 230° while oxygen is excluded, and all is changed. It has become brick-coloured, perfectly opaque, non-luminous, chemically inert, and may be swallowed in large quantities with impunity. Having neither lost nor gained in weight, nor in any way changed its ultimate nature, it has yet by re-arrangement of its molecules acquired different, and indeed opposite, properties. To which add that when subjected to the fit conditions it re-acquires the original properties.

Biology is rich in examples. One who, lacking entirely the ideas insensibly taken in during ordinary life, was brought suddenly face to face with the facts, would find it incredible that hair and nerve, tooth and eye, had all arisen by insensible steps out of the same originally-uniform dermal tissue. If he contemplated the parts which carry on the pulmonic circulation as they exist in man or any other mammal, he would conclude that their connexion is necessary and must have existed from the beginning: arguing, as he might, that the right auricle and ventricle would be useless in the absence of lungs, and that the lungs would be

useless without the right auricle and ventricle. 'See,' he might say, 'if we stop the breath the heart soon ceases to pulsate, and if the heart stops the breathing quickly comes to an end. Clearly, then, the two must have co-existed as such from the beginning. Their interdependent functions constitute a *form* of physiological action.' Yet the investigations of biologists show that no such arrangment originally existed, but that this reciprocal dependence has been established by degrees.

Nor does Psychology itself fail to yield undeniable instances of transformation allied to those which the Kantists hold to be impossible. An example is furnished by rapidly-recurring sensations of light. Every child, at some stage or other of mental development, observes that on whirling round a stick, of which the end is burning or red-hot, an apparent circle of light is produced: by a succession of sensations there is produced what appears to be a continuous sensation. The direct verdict of consciousness is that there exists a luminous circle; whereas we know that at any moment light exists only at one very small part of the circle. An illusion of like nature, but less easily shown to be one, is supplied by various flames which appear steady and persistent, but each of which consists of a series of small explosions: a fact demonstrated in singing flames. In these there are simultaneously produced a continuous impression of light and a continuous impression of sound, by impressions which are in both cases discontinuous. This example, which singing flames furnish, introduces us to the example furnished by musical sounds in general. These show us clearly how a state of consciousness which seems perfectly simple and perfectly homogeneous, may be neither the one nor the other. The crack of a whip, or the tap of one's nail on the table, seems quite unrelated to a musical tone; save in the respect that both are sounds. To those who have not experimented on the matter, nothing can seem more obvious than that, however short the lengths into which you cut a tone, it will still retain its quality as tone; and, conversely, that by no possibility can a musical tone be produced from separate cracks. Yet both of these conclusions are false. The rotating instruments of Hooke and of Savart, by which separate sharp cracks can be made with increasing rapidity, prove incontestably that brief unmusical noises may be so arranged as to constitute a long musical sound; and that musical sound, smooth and continuous though it seems, really results from successive impacts of aerial waves, which yield separate impressions to the nerves.

But the Kantists, bent on maintaining that supernaturalness of mind which is implied by the hypothesis of predetermined forms of thought, and therefore profoundly averse to that evolutionary view which contemplates mind as having had a genesis conforming to laws like those conformed to by the genesis of the body, ignore these significant facts furnished by various orders of phenomena, and ignore even the significant facts furnished by psychology itself. They are positive that a certain kind of consciousness which, in the developed mind, seems continuous and homogeneous, must always have had the traits of continuity and homogeneity—cannot possibly have been composed out of units of thought which were different and discontinuous. But the reader who is not bound by a foregone conclusion, will perhaps be prepared by these illustrations to see that the consciousness of space may have arisen out of components which, considered individually, contain no consciousness of space.

The reader will be still better prepared if, after contemplating these instances of transformations throughout things in general, as well as throughout certain modes of mind, he pauses a moment to contemplate a familiar experience which, in another way, elucidates the process of producing, by composition, mental states that are unlike their components.

When the end of a walking-stick is thrust into clay or other yielding matter the consciousness of softness presents two significant traits. The first is that though it seems quite simple, it is demonstrably compounded out of elements which, considered separately, are unlike it. One of them is the sensation of slight pressure from the handle of the stick on the palm of the hand. Supposing the limb to be motionless, something hard may be pressed against the end of the stick with such small force as to produce in the palm just the same sensation. Similarly, if we consider by themselves the sensations of muscular tension which occur in the moving arm while the stick is being thrust into the clay, it is clear that, taken by themselves, these do not yield the consciousness of softness: equal feelings of tension and motion might be produced by pushing forward a child's perambulator. But when with the pressure on the palm of the hand and the changing sensations of tension in the arm, is joined the visual perception of stationariness in the mass, a consciousness of softness arises: there results a knowledge which by the unanalytical intelligence, is taken to be simple and directly yielded instead of being, as we see, complex and inferential.

The other trait of this cognition is its apparent externality.

Anyone who accepted his experiences uncritically, would say that the softness was felt by him at the place of its existence; and if you pointed out that this could not be, since the stick is senseless matter, you would simply puzzle him by the conflict between reason and perception. But to one who can rightly interpret it, the experience shows that this feeling of softness at the end of the stick is not only compounded of mental states unlike it, but that though the soft object is remote from the organs of sense, its softness appears directly present to them.

And now, carrying with us these general truths, (1) that a consciousness which appears to be simple, continuous, and undecomposible, may nevertheless consist of multitudinous units, (2) that by the compounding of consciousnesses, now of the same kind and now of different kinds, a consciousness quite unlike, in apparent character, may be produced; and (3) that by a seeming extradition of sensations, perception may have its bounds apparently extended to places beyond the organism; let us consider how far, by their help, we are enabled to conceive the space-consciousness as a product of evolution.

It is clear that as the apparently continuous and homogeneous consciousness of sound is constituted by separate units, so may be the apparently continuous and homogeneous consciousness of space; and we have, in fact, more easily accessible evidence that it is so constituted, since it is readily decomposible into relations of positions.

But if the consciousness of a relation of positions as tactually disclosed, contains certain elements which are separable from space-implications, and would be cognisable were space unknown—if it contains two sensations of touch with an intervening sensation of changing muscular tension; then, as in other cases above instanced, there may be produced by union of these components, a state of consciousness unlike any of them—a state in which they become so fused, and their respective natures so masked, that the resulting relation of positions appears to be *sui generis*—seems as unlike the sensations it is formed of, as the transparent liquid sulphuret of carbon is unlike the opaque and solid sulphur and carbon which form it by their union.

And then, passing from the primordial relations of position as known by touch to the relations as known by sight, which experience discloses as their equivalents, we may observe, in the third place, that in virtue of the extradition of sensations so clearly illustrated when the walking-stick is thrust into the clay, we are made to feel as though the

relations of position at a distance are present to a consciousness which extends to them. Whence also it follows that by the fusion of an infinity of such relations, which are simultaneously presented to us because the multitudinous retinal elements can receive simultaneous impressions, there is produced our aggregate space-consciousness.

And now, possessed by these preliminary conceptions, let us consider more closely the process of genesis as we may conceive it to have taken place in a developing consciousness.

Wholly to divest ourselves of that space-knowledge, the great body of which lies latent in our inherited nervous structures, and the finished form of which is produced by personal experiences, is of course impossible. All we can do is so to place ourselves as to exclude the space-knowledge accompanying acts of vision, and to reduce to a minimum the space-knowledge which tactual exploration yields; and having done this to suppress as much as possible the ideas of past experiences. These ends may be best compassed by being led blindfold into the middle of a large, entirely unknown, and absolutely dark room: the blindfolding being desirable to prevent perception of the position of the walls on entering, and such revelation of them as is yielded by light through crevices. After being left alone it will be found that in the absence of any space-suggestions implied by visual and tactual perceptions, or those ideas of them which knowledge of the room would give, much of the space-consciousness is lost. So little space-consciousness remains that there is almost a sense of imprisonment—an oppressive feeling of being shut in by the darkness. What components of presentative consciousness continue distinct? Primarily those sensations of changing muscular tension which accompany movements of the limbs, and which, in the absence of space-knowledge, are still known as continuous slight efforts, varying according to the muscles contracted and the degrees of their contraction; and there is experience of the ability to produce and reproduce those slight serial feelings without check—an experience which we ordinarily identify with freedom of movement. If the observer proceeds to grope about until he touches an article of furniture, he finds that one of these series of muscular feelings previously known only with indefinite beginnings and endings, is sharply cut short by the occurrence of a vivid feeling of another kind—a sensation of touch. On moving his hand along the edge of, say, a table from the corner first touched to another corner, he may perceive that

in the absence of any space-interpretation he would still be conscious of a series of muscular tensions, a simultaneous series of touches, and, in this double series, two sharp marks caused by the corners; as also of reversed series when his hand was moved the other way. And he may see that such experiences would be receivable and distinguishable if no space-knowledge existed; as would also the experiences in which a series of muscular tensions was cut short at either end by a touch without any intervening sensations of touch: the cases being those in which the hand was moved, not over a surface or edge but from one projecting point to another. Amid these varied experiences there is one thing constant. The muscular strains forming the series may be strong or weak; they may form a short series or a long one; they may come from these muscles or those; the touch may be slight or strong; may be received by this part of the body or that. But in every case there is a reversible series of sensations of tension sharply marked off at either end by a sensation of touch.

What in other cases happens when among many experiences one element is constant while all others are variable? The variable elements, ever conflicting, continually cancel one another; while the constant element becomes more distinct. Hence then there arises an established association between two separate touches and an intervening series of strains—a general experience abstracted from particular experiences. And it may be perceived that the abstraction might be made by a developing intelligence before there existed any space-knowledge of two positions and the interval.

When, by groping about the table, some article, say a small book, is laid hold of, there comes a further experience. Two sharp sensations of touch are simultaneously received from two angles. Whereas two such sensations were, before, separated by serial feelings of effort occupying an interval of time, now they are not thus separated. Or, to speak in terms of a rudimentary consciousness, not yet containing the abstract idea of time, in the first case there come between the two feelings certain others unlike them, while in the second case there are no such others: the two exist in consciousness together. Though, literally, they may not be equally present, yet the transitions from the one to the other are so rapid that they appear present at once. A further fact is disclosed. While the sensations from the angles of the book are simultaneously received, it is found on experiment that they may, like those from the angles of

the table, be also received in succession with an intervening reversible series of sensations of touch and tension, or of tension only: these two experiences are discovered to be equivalents. That is to say, the time-element, or that which answers to the time-element, disappears; and two consciousnesses which are connected by a reversible series of muscular tensions are proved to be identifiable with two consciousnesses which coexist. Though in a developed intelligence the two positions are thought of as having a space-interval, and the potential series of sensations uniting them is thought of as motion, yet it is clear that, apart from the thoughts of space and motion, the experiences described may be distinguished and classified, and there may be reached that consciousness of co-existence out of which the consciousness of space is to be built.

Sundry other experiences are to be named which aid in developing the consciousness of tactually-known space. Sensations of touch from comparatively remote points, say, on the surface of a wall, may be simultaneously received at the extremities of the outstretched arms; and may then, as before, be united by long chains of feelings of touch and tension. The hands and feet may be similarly used to achieve parallel results. And often-repeated experiences, yielded by the same environing objects, reveal such approximate constancy in the serial feelings between particular sensations of touch, that it comes to be known at about what points in such series these last will occur. There is so constituted a knowledge of the whereabouts of surrounding things, given in terms of serial sensations—a knowledge which implies ability to carry on some converse with things in space, without any greater knowledge of space than is implied by knowledge of co-existent things. Self-exploration of the body and limbs affords further components. Here the part touching and the part touched yield simultaneous sensations, giving a kindred, though different, experience of co-existence. Moreover it is found that two sensations originated on the skin may be brought into relation in consciousness either by the passage of the finger from the one to the other, or by laying the whole hand upon the surface between them: another way in which the equivalence between certain co-existing sensations and certain serial sensations is established.

This consciousness of space acquired tactually, is of course vastly extended and transfigured when there is added the visually acquired consciousness of space. The retina is a tract of multitudinous separate sensitive agents which, by

the focalised rays cast upon it, is enabled to touch the images of surrounding objects, as the skin touches the objects themselves. It has the immense advantages that while mediately touching one object, or part of an object, with absolute distinctness, it mediately touches a multitude of others with considerable distinctness; and so brings all of them into relations of co-existence, while touch can bring only a few into such relations. Moreover, by those focal adjustments which produce distinct images at different distances, the consciousness of co-existence is extended from objects on the same plane to objects on planes at all distances: whence results that consciousness of space of three dimensions, in yielding which vision so immensely transcends touch. At the same time, the relations of co-existent positions previously known only in terms of serial tensions and touches, come to be known also in terms of visual impressions and the serial strains of ocular muscles. When looking at the small book, as when grasping it, there is practically a simultaneous consciousness of the angles, while there is the power of directing the eye, as of moving the fingers, from angle to angle, and perceiving that the impressions of the angles are in each case united by a double series of sensations: the equivalence between the two double series being such that the one being given the other is known. What next happens? The same two occupied positions produce, now a pair of consciousnesses through touch and now a pair through vision, and these two pairs being united by different sets of serial sensations, these different sets tend to cancel one another: become known as non-essential elements in the experience of the relation between the different positions. Once more, the two positions, being occupied at one time by these objects and at another time by those, come to be dissociated from all particular objects occupying them, and conceived in themselves, apart from the objects; just as the relation between them comes to be conceived apart from the serial sensations, tactual or visual, experienced in establishing it. Hence eventually arises a consciousness of two positions in space and an interval between them—a consciousness freed from all sensory elements. This purified consciousness of co-existing positions having been reached, the building up of the consciousness of space at large becomes easy to understand. And then, further, it becomes easy to understand how the space-knowledge gained through vision, being at once relatively extensive, relatively exact, and apparently effortless, is habitually used instead of the space-knowledge gained through touch. The symbols which

our eyes yield are so immeasurably more convenient and copious than those which our hands yield, and the substitution of the first for the last has grown into so irresistible a habit, that thought is carried on in the substituted symbols almost to the exclusion of the original ones, and without recognition of the truth that they derive their meanings from the original ones. Whoever will observe that, while running his eyes over these printed marks, he practically ignores the equivalent oral articulations into which he is internally rendering them; and if he will further observe in how vague a way he imagines the objects and acts for which these words stand; and if he will then remember that this partial substitution of printed marks for the things they remotely signify has taken place in the course of a few years; he will have no difficulty in conceiving how the substitution of that knowledge of space expressed in visual language for that knowledge of space expressed in tactual language, which has been taking place through the whole series of ancestral beings, has become organic. When he recollects, too, that words much used seem to have absorbed some of the natures of the things they stand for, so that the uneducated think there are real connexions between the two; he is helped to perceive how these visual space-impressions have absorbed the meanings of the tactual space-impressions they are equivalent to, and have come to have meanings which appear to be independent. While at the same time it becomes comprehensible that, from this compounding of elements of consciousness of sundry kinds, there eventually emerges this kind of consciousness which seems unlike in quality to any of them; as we have already seen happens in other cases, with things material and mental.

To the last, however, our developed consciousness of space yields up its original components when analysed. As distinguished from body, it presents itself as possibility of movement; its parts are reached by movements; its amounts are measured by movements. A prisoner in the dark learns the size of his cell by muscular motions, which are severally ended by touches; and the consciousness that he has but little space is the consciousness that he has but little freedom of motion. Even in a lighted room, when shut up, the consciousness of space is, for the time being, practically restricted to the sphere of potential movement within the walls. Moreover, our visual consciousness of space is given in terms of the muscular movements which adjust the axes and foci of the eyes and turn them about. Lastly, when there is any doubt about visually-perceived space-relations,

they are brought to the test of comparison with tactually-perceived space-relations; and, as in the case of optical illusions, the verdict of these last, received through muscular motions and touches, is held to be conclusive. That is, muscular motions and touches are the ultimate components of the space-consciousness: all other components being but symbols of them.

These last paragraphs prepare the way for a final reply—the reply, namely, that all the truth there is in the doctrine of forms of intuition is not only congruous with the hypothesis of evolution, but is inevitably implied by it, and is implied under a comprehensible shape instead of under an incomprehensible shape. For the inherited structures of the organism presuppose actions, bodily and mental, to be performed by them; and their respective adjustments constitute the predetermined forms of such actions.

The first elucidation of this general truth may be given as a reply to a possible argument. Some pages back, when dealing with the statement that consciousness of the object touched is necessarily given along with the sensation of touch, and when pointing out that if the sensation caused by pressure against the object becomes intense it excludes all thought of the object, I passed over a rejoinder that might be made, because I intended to deal with it here: the rejoinder that though, when a sensation of pressure becomes intense, thought of the external object causing it may cease, yet there remains a consciousness of the position of the part in which the sensation exists. This is certainly true in the adult, and doubtless it soon becomes true in the infant. But already, before individual experiences are received, there exist the nerves supplying the part affected, and the nervous centres with which they are connected; and already, therefore, in these inherited structures, evolved during converse between organism and environment through countless ancestral lives, there pre-exists a potential knowledge of position: infinitely numerous past experiences have so moulded the nervous organisation that the sensation excites the correlated consciousness of the spot affected. Several kinds of evidence yield indirect verifications of this view. We have, in the first place, the fact that the apprehension of position is definite or vague according as the part is well or ill placed for purposes of exploration. Knowledge of the point at which a finger has been touched is far more precise than knowledge of the point at which the back has been touched. In the second place we have the fact that more exact and

detailed knowledge of the positions of parts that are touched, is acquired when an unusual amount of exploration is carried on by the part; as in the fingers of a blind man, who becomes able to read by touch. In the third place the fact that when a limb has been amputated, irritations set up in the remains of the nerves are referred to those remoter parts of the limb which no longer exist, joined with the fact, of which I have personal experience, that under certain abnormal conditions irritation of the end of one finger produces a sensation localised in the end of another finger, show that such consciousness of space as is implied by consciousness of places in the body, depends on the presence of those channels which convey impressions from the periphery of the nervous system to its centre. And once more, the fact that consciousness of position is determined by the inherited distribution of the nerves is conclusively shown by the well-known behaviour of a decapitated frog in using its limbs to push away a scalpel from a point that is touched.

Evidently these facts, along with numerous kindred facts, fall into their places as results which the process of evolution has necessitated; and they carry with them the implication that, in superior creatures, inheriting the effects of infinite experiences, some potential consciousness of space precedes experiences of things in space. Just as before birth the stomach implies food to be by-and-by swallowed, just as the lungs presuppose an environing air to be presently breathed, just as the lenses of the eye presuppose light-reflecting objects which are to have their images cast on the retina, just as the hand foretells a surrounding world full of things to be grasped; so do the nerve-centres which are to co-ordinate the actions of senses and limbs contain partially-organised adjustments to the external relations of phenomena; and so do certain of them contain structures in which there lies latent the apprehension of space-relations—structures requiring but a little exercise to complete them, and to change the vague potential consciousnesses of positions into definite consciousnesses. Obviously, too, there exist, partially-developed in these nerve-centres, certain universal necessities of action corresponding to certain universal necessities of relation; latent axioms, the truth of which is apprehended the moment their terms are clearly recognised. As, in the course of converse with the environment, a limb, habitually bent in a certain way, acquires a structure which prevents it from bending in an opposite way; so, perpetual converse with space-relations having a

fixed order, results in the formation of nervous structures which will act only in a corresponding order; thought in an opposite direction becomes impossible.

And here, indeed, we see that not only the Kantian hypothesis, but also the Experience-hypothesis in its original form, is found wanting when brought face to face with the facts of nervous organisation. What is the meaning of the brain? What are the meanings of the various ganglia at its base, their entering nerve-trunks, their commissures, their connexions with the cerebellum and the superjacent hemispheres? Is not the conclusion irresistible that these imply potentialities of established, or partially-established, nervous actions, with the corresponding established, or partially-established, modes of consciousness? If in the drum of the ear, the attached ossicles, the cochlea, the semi-circular canals, &c., we recognise appliances for reception of sounds, various in *timbre*, pitch, and loudness; then it is absurd not to recognise the correlative nervous centres as appliances for the apprehension of those sounds in their various qualities and relations; and it is similarly absurd not to recognise other parts of the brain as severally organised for the apprehension of other groups of related phenomena—organised most elaborately in those cases where the continually-inherited results of experiences have been most frequent and uniform, as in the relations of space. And on remembering that the potentialities of those modes of mind which we distinguish as emotions evidently exist in the infant, which now shows signs of anger, now of fear, now of pleasure, it becomes a still more irresistible implication that all the other modes of mind are potentially present as correlatives of structures more or less developed; and emerge from their vague forms into definite forms as fast as the structures evolve, in the same way that the fumblings of the hands grow into definite prehensions as the muscles and nerves of the hands become better organised.

The above sketch, which presents in a briefer and partly different way the arguments contained in the chapters on "The Perception of Space" and "The Perception of Body as presenting Statical Attributes," must of course be taken as a rude and simplified account of a process which is extremely involved. Further, it must be acknowledged that as we can never wholly free ourselves from our developed space-consciousness, it is difficult, when tracing out its genesis, to avoid including, at each stage of explanation, nothing beyond that which has been previously explained.

We have to contemplate the process of genesis as vicariously undergone; and have to verify the successive stages by reference to our own analysed experiences.

Even, however, were the developed consciousness of space so organically inwoven with every perception and thought as to disable us from even partially separating it, we might still be right in believing that it has been developed. For there are phenomena of consciousness which we cannot represent to ourselves as taking place, and yet which we know with perfect certainty do take place. We have an instance in the commencement and growth of consciousness in general. One who watches the early vague gropings of an infant which has "no speculation" in its eyes, must admit that there does not yet exist in it any appreciable amount of mind. Joining the testimony of parents with the implication of universal experience, he sees it to be an inevitable conclusion that he himself was once without any such coherent consciousness as that which he calls thought. Yet, if he attempts to go back to this stage, and imagine his mental state when he had no power to recognise things, he finds himself unable to do so. He is obliged to carry with him his mental habits, and to read into his earliest perceptions those processes of perception which have become confirmed. But this fact that in thinking about the genesis of his intelligence he cannot free himself from his intelligence, does not make him question the truth that he was once without intelligence. Similarly, then, with that consciousness of space which forms a part of his mental possessions.

Of course, the interpretation takes for granted the existence of objective space, or rather of some matrix of phenomena to which our consciousness of space corresponds. Manifestly, the hypothesis that a form of intuition is generated by converse with a form of things, necessarily postulates the existence of a form of things. With this admission, however, may be joined the assertion that the Kantian hypothesis tacitly, though unavowedly and inconsistently, makes the same assumption. When Kant said that "Space is *nothing else* than . . . . the subjective condition of the sensibility," he, by implication, proved that in his mind there existed the thought of it as *something else*. If the consciousness of space is exclusively "the subjective condition of the sensibility," how could there have been suggested the thought of space as a "something else," the existence of which had to be denied?

It must also be pointed out that since, on the evolution-hypothesis, that consciousness of space which we have lies

latent in the inherited nervous system, and since, along with those first excitations of the nervous system which yield rudimentary perceptions of external objects, there are produced those first excitations of it which yield the rudimentary consciousness of the space in which the objects exist,—it must necessarily happen that space will appear to be given along with these rudimentary perceptions as their form. There will necessarily very soon result something like that inseparability which the Kantists allege. Hence we cannot expect completely to decompose into its elements the space-consciousness *as it exists in ourselves.* We can expect only, as above said, to trace the synthesis of it vicariously—to see whether, in conformity with the known laws of mental growth, we cannot put together the experiences out of which it has been evolved.

Much more might be added; but if what has been said above does not carry conviction, neither would anything further. With those who have not yet thought about the question at issue, and with those whose judgments are in suspense concerning it, the foregoing arguments may have weight; but they are unlikely to weigh with those who have espoused Transcendentalism. Though, when that original form of the Experience-hypothesis which ascribes all mind to the experiences of the individual is replaced by this developed form, which ascribes mind in chief measure to the inherited effects of the experiences of all antecedent individuals, we are enabled to understand how forms of intuition are produced by the moulding of thought during converse with things, the solution is, as already said, unacceptable by the neo-Kantists. Implying the production of mind by natural evolution instead of by supernatural endowment, it is at variance with that conception of the universe with which the supernaturalism is bound up.

Here, so far as I am concerned, the matter must rest. Controversies in general are of little use, and they are especially futile where there can be no agreement respecting the test of truth. It is useless to argue unless such a test is agreed upon; and it is impossible for my opponents to accept my test (the inconceivableness of the negation), since, did they accept it, their doctrine would disappear at the first step.

II.—VOLKMANN'S PSYCHOLOGY. (I.)

By Thomas Whittaker.

The articles on Herbart and his successors, contributed by Mr. Stout to Mind during the last two years, have furnished English students of psychology with a convenient introduction to the work of the school which, in Germany, has the best claim to represent the science in its whole range. The generality of Mr. Stout's plan of treatment, of course, precluded him from going into detailed exposition of the work of particular writers of the Herbartian school. It has, therefore, seemed desirable that some more special account should be given of Volkmann's *Lehrbuch der Psychologie*.[1] For this treatise (see Mind x. 146, 476, and Mr. Stout's article on "The Psychological Work of Herbart's Disciples" in xiv. 353 ff.), while it is a representative work of the school, is also much more. As the most comprehensive psychological treatise yet written, and as at once systematic and historical, it is of especial importance to English students; for systematic comprehensiveness and historical treatment are less frequent in England than in Germany, and are, it will be allowed, seen at their best in the best work of German writers.

There are, indeed, some English psychologists who go much beyond this allowance; who are seeking to reform—if not to revolutionise—English psychology by ideas derived from the German schools. Along with these, Mr. Stout, in his comparison of Herbart with the English psychologists and with Beneke (Mind xiv. 1 ff.), appears to class himself, when he insists that the Herbartians have made important advances of general theory on English Associationism. Before beginning the exposition of Volkmann's great treatise, it will, accordingly, be well to consider briefly how far we must accept or reject Mr. Stout's contentions. In this way, it will, at least, be made clear from what point of view the present exposition proceeds.

Of the relation between psychology and metaphysics, Mr.

[1] *Lehrbuch der Psychologie vom Standpunkte des Realismus und nach genetischer Methode.* Von Ph. Dr. Wilhelm Volkmann Ritter von Volkmar, weil. o. ö. Professor der Philosophie an der Universität zu Prag, &c. *Des Grundrisses der Psychologie* dritte sehr vermehrte Auflage. 2 Bände. Cöthen: O. Schulze, 1884, 1885.

Stout appears to take the English rather than the Herbartian view. He, at least, makes no attempt to uphold Herbart's position that the fundamental principles of psychology admit of deduction from a theory of the nature of the soul. The nature of the soul, he would rather appear to hold, can only be determined after the psychological formation of the Ego in its distinction from the Non-ego has been investigated genetically. And, if he does not definitely proclaim his agreement with the position arrived at by Waitz, for example, within the Herbartian school, that metaphysics ought to be founded on psychology, and not psychology on metaphysics, there is nothing in his articles inconsistent with this view. Now this is understood to be the traditional English position. It is not at this point then, according to Mr. Stout, that any reform of English psychology is needed.

The most obvious point of contact between English Associationism and the Herbartian psychology is rejection of the 'Faculty-doctrine'. Here Mr. Stout thinks the Herbartians are a little more consistent than the Associationists. In his article in MIND No. 53, however, he, to a certain extent, mixes up the successors of Locke with the followers of Reid. But to show that there are traces of the Faculty-doctrine in a follower of Reid is not to show that genuine Associationism is affected by it. No doubt, it may be shown that Associational psychologists speak from time to time of mental 'powers' and 'faculties'; but, as Mr. Stout himself allows, these terms are used in a literary and not in a scientific manner. The English psychologists have seen that it is not necessary to be always parading their scientific apparatus. When they are merely describing mental processes, and do not for the moment aim at assigning their laws, they are content to use the ordinary terms of description. From the first, English psychology avoided hypostasising the names of groups of mental phenomena into causes of those phenomena. This—which is the 'Faculty-doctrine'—the Germans fell into, because their psychology was for a long time simply a branch of the Scholastic philosophy which continued to reign in Germany after the opening of the modern period. For Germany—though not for Europe—Leibniz made the first important advance beyond the Faculty-doctrine. The Herbartians, by much laborious polemic, were at length able to dismiss it completely; but they had been preceded by the English psychologists, who had avoided it by the instinct of genius; and, in the end, the Herbartian psychology could not be clearer of the assumption of 'faculties' as hypothetical causes than English psychology, which is absolutely clear of it.

Where Mr. Stout seems chiefly to think the Herbartian psychology superior to Association-psychology is, however, in what he regards as its more developed view of the "psychological mechanism". Herbart, he contends, has given a fuller account of the mind as a "mechanical system" than the Associationists. He does not apparently accept all Herbart's laws of "interaction of presentations," or his mathematical treatment of this interaction; but he seems to think that the mere attempt at mathematico-mechanical treatment was, scientifically, an advance on English Associationism. If, however, the Herbartian attempt to explain the order and succession of mental occurrences did not really succeed except in so far as it involved laws of association (stated in a peculiar manner), it is difficult to see where there is any advance. And Mr. Stout does not in effect show that the Herbartians by their "mechanical" conception have been able to do anything beyond what has been done by means of the laws of association as ordinarily stated. The conception of the laws of mind as constituting a "mechanical system," on which he lays so much stress, is really a defect of Herbartianism, and not a merit. For, in fact, the mind is not a "mechanical system". This being so, the psychologists who do not call it one have an advantage over those who do, if only they can maintain equally well the scientific character of psychology. That the term "psychological mechanism" is a rather unfortunate one has been seen by members of the Herbartian school itself. Waitz, for example, in his *Grundlegung der Psychologie*, has very well put the objections to it. When we speak of "mechanism," he says (ed. 1846, pp. 140-1), we are accustomed to think of the laws of pressure and impact of masses of matter. Hence the term "psychical mechanism" is to be avoided. We should rather speak of a thoroughgoing determination of the mental life according to law, running parallel with the "organic and mechanical" determination of the corporeal world. For processes in the corporeal world itself, as Waitz goes on to indicate (p. 141 n.), are not all capable of adequate expression in terms of mechanism. There is a "phenomenal" opposition of the organic and the mechanical.[1] Now English psychology, while insisting

[1] Waitz's distinction might be applied within the organism, some parts of which have a kind of external "mechanical" relation to more "organic" parts. If we apply material analogies to mind, we may distinguish the more "mechanical" from the more "organic" mental processes. These may be supposed to be parallel respectively to cor-

on the determination of mental phenomena, keeps the distinction perfectly clear between determination according to law and mechanical determination, which is only one particular expression of scientific law. For its "laws of association" are always understood to be laws of mind, and not laws of material change,—whatever material changes may be the concomitants of mental associations. Thus, instead of English psychology needing a reform on Herbartian principles, the Herbartian psychology itself, by an internal advance, has tended to the English position.

But, it may be said, the really important point in the doctrine of the "psychological mechanism," and that which constitutes its advance on English Associationism, is its theory of the interaction of contemporaneous presentations, and of the existence of "unconscious" presentations among these. That this is a very characteristic point of Herbartianism may be admitted. And as the idea of unconscious or subconscious presentations was derived by Herbart from Leibniz,[1] it may plausibly be represented as a distinctive idea of German psychology. An investigation of the relations of Leibniz to his French or English predecessors might indeed show that absolute priority in the expression of the idea does not belong to him; but it remains true that it has hitherto been more elaborately worked out in German psychology than elsewhere. At a later period, however, the physiologists generally would seem to have come upon it independently of influences from any psychological school. It has certainly made its way into modern English thought apart from Herbartian influences; so that, whatever may be its history, we do not now need to go to Germany for the idea.

The notion of a mental "continuum" and its "differentiation," which to many seems so important an advance of the latest English psychology, whether it is specially Herbartian (as Mr. Stout contends) or not, has been arrived at, so far as it has any scientific value, on the ground of purely English psychology. Mr. Spencer's "vivid aggregate never known to be broken" and "faint aggregate never known to be broken" seem at least to be the clearest possible expression for the "presentation-continuum" and the "memory-con-

responding processes in the organism or the central nervous system. In this way we get a conception not altogether unlike the Stoical conception of the *ἡγεμονικόν*.

[1] See, for a detailed account of its derivation, a recent memoir by Dr. Johannes Barchudarian, *Inwiefern ist Leibniz in der Psychologie ein Vorgänger Herbarts* (MIND, No. 57, p. 146).

tinuum". These are represented as arising psychologically by differentiation; and we are told that "each set of states has among its members both a simultaneous cohesion and a serial cohesion" (*Psychology*, § 453). In this proposition it would be difficult to show what is wanting to the idea of continuity. If it is said that expressions such as "aggregate" and "set of states" show that Mr. Spencer is still at "the abstract point of view of English Associationism," it can only be replied (as it has been replied to similar arguments) that this "abstraction" is scientifically indispensable, and that Herbartianism proves its scientific character by making similar abstractions. For the Herbartians, in the main, work with sensational elements, from the relations of which they proceed to derive the actual continuity of the mental life.

What can really be maintained on behalf of the Herbartian psychology is that it is a genuinely scientific system, overburdened with mechanism as compared with English psychology, but more systematic and more elaborate. Volkmann's work adds to this the merit of being also comprehensively historical. The historical part of the treatise is a summary, equally valuable for reading and for reference, but hardly admitting of further condensation. A mere indication of its value must suffice. For the exposition of the systematic portions of the work, the best rule to adopt—from the point of view here taken—will be to reduce the Herbartian explanations as far as possible to their effective part by clearing away the superfluous machinery (including the term "psychological mechanism" itself). When thus reduced, they become associationist explanations. A general idea of Volkmann's actual procedure, however, must at the same time be given; and, to give this, some account must be included of his metaphysical deductions and of his specially Herbartian statements of psychological laws, even at the risk of occasionally repeating what Mr. Stout has already set forth. The order of exposition will differ little from that of Volkmann himself. Since, in accordance with the principles of his school, he aims at employing in his first volume chiefly the "synthetic," in his second chiefly the "analytic," mode of treatment, it will be convenient to finish the exposition of volume i. in the present, and to deal with volume ii. in a following, article. There is, besides, as Volkmann points out, a natural division of subject-matter between the two volumes, connected, as will be seen, with the difference of treatment.

Psychology, according to the Herbartian view, is neither a purely "speculative" nor a purely "empirical" science. It has now reached the stage—towards which all sciences tend—in which it can be constructed both from experience and from metaphysical principles. It is empirical in that it finds its materials in experience—its chief experiential source being self-observation; speculative in that its laws are deduced from a metaphysical doctrine as to the nature of the soul. Its method is "the genetic method". That is to say, it traces the origin of mental phenomena from their elements according to the laws speculatively deduced. It is "synthetic" or "analytic" according as its explanations start with general laws and proceed to the construction of the concrete phenomenon, or start with this last as a problem and proceed to its resolution into those constituent elements and relations that have been already recognised as grounds of explanation. Thus the whole of psychology might conceivably be treated either synthetically or analytically; but actually the synthetic treatment is best adapted to the simpler, the analytic to the more complex, phenomena.

By "the standpoint of Realism," referred to in the title of Volkmann's work, we are to understand, not the realistic doctrine of the external world, but the Herbartian ontology, derived from the Monadism of Leibniz and expressly connected with it both by Herbart and his disciples. The Herbartian doctrine is called Realism as affirming a plurality of real beings, which form the ground both of mechanical and mental occurrence. For this doctrine, the soul is the simple and unitary real being that is "the bearer of presentations". The assumption of its unity and simplicity is required to explain the unity of consciousness as revealed in self-observation. To explain the origin of the plurality of presentations given along with the unity of consciousness, we have to think of the soul as connected in a system with other real beings. Such a system is formed by the real beings composing that which, physically viewed, is the organism. The interaction of these with the soul, or central real being of the system, is the ground of "presentation". When we abstract from the connexion of the soul with other simple beings and regard it merely as the simple being that is the bearer of presentations, we get the conception of "mind". The "mind," as such, is outside all relations of space and time. The "soul" is in a certain body, and is in that time in which its presentations are produced.

The question of "the seat of the soul," in the sense in which it is permissible, is a physiological question. For its

solution Volkmann adopts the physiological hypothesis of a "focus" of the nervous system, in which not the nerve-fibres themselves but all nerve-excitations meet,—"a (fixed or changing) point of convergence of all waves of excitation". At this central point of nervous activity we have to place the "bearer of presentations". Thus the physiological and the metaphysical views are brought together. The point of convergence of excitations in the brain may be spoken of as "the seat of the soul". On the ground of a continuous series of analogies a soul is to be assumed in the lowest animals, but not in plants, these not being sufficiently centralised.

States of the soul, that is, presentations, necessarily arise in consequence of its interaction with the system of real beings constituting the organism. A "presentation" may be defined as "the simple state of the soul in which this brings to expression its opposition to the reals with which it finds itself in immediate or mediate connexion". The presentation (*Vorstellung*) is related to presentative activity (*Vorstellen*) as the product to the process. The presentation with its presentative activity is not to be thought of as something separate from the soul. On the contrary, the soul is that which is active in the presentative activity, and of which the presentation is the development. The special quality of a presentation—within its general psychical quality, which belongs to it as a state of the soul—depends on the quality of that real element whose connexion with the soul occasions the presentation. This dependence, however, is no "mirroring". The true conception of the presentation lies between two opposite errors,—that which makes it a mirroring of the external thing, and that which makes it a self-evolution of the mind or of a mental "power".

A presentation, having once come into existence in consequence of an entrance of real beings into a certain combination, continues to exist after the disappearance of this combination. One presentative activity may fall into conflict with another and become "bound," but the presentation is not lost to the soul. It only has its activity suspended so long as it is "bound". The "paralysed" activity has been transformed into presentative "effort," which may at any time overcome the obstacles that temporarily bind it.

The conception of the Presentation as arrived at metaphysically coincides with that of a perfectly simple Sensation. But while sensation as theoretically deduced is a state developed by the soul on occasion of the stimulus con-

veyed by a single primitive fibre, sensation as empirically observed is always a complex total state proceeding from numerous elements opposing or balancing one another. We must call the relatively complex states beyond which experience does not carry us "presentations" or sensations; making at the same time the reservation which the metaphysical deduction of the true presentation as simple state requires.

Sensation as presentation has its "content" or "quality"; as presentative activity its "intensity" or "quantity"; as union of elementary states its "tone," determined by the interaction of its elements. The content of a sensation corresponds to but does not resemble the quality of the stimulus that is its occasion. The quality of the stimulus has for its conditions on one side objects with changing qualities, on the other side an organ of approximately constant character. Among the psychological circumstances influencing intensity of sensation is attention; among the physiological circumstances, prolongation of the stimulus and diffusion of it over the organ, freshness of the organ, &c. By the tone of a sensation is meant the fact of its appearance with the consciousness of "furtherance" or "hindrance". The consciousness of hindrance is pain in its various degrees; the consciousness of furtherance pleasure. Hindrance and furtherance are to be understood with reference to the relation between the stimulus and the existing state of "tension," which depends on interactions within the organism. What is hindered or furthered is the resolution of a tension. Since every furtherance supposes a previous hindrance, every "resolution" a previous tension, pain is the primary, pleasure only the secondary, phenomenon of tone. Thus consciousness of tone is not consciousness of a particular felt content, but is a consciousness of the process of feeling as determined by interaction of one element with others. Between determinateness of content and strength of tone there is an inverse relation. There are no absolutely toneless, as there are no absolutely contentless, sensations.

Under the head of intensity of sensation, Volkmann gives some account of the investigations of psychophysics. Proceeding to discuss in detail the "kinds of sensations" as determined by their reception from different sense-organs, he describes in order the results attained as regards Sight, Hearing, Smell, Taste, Pressure and Contact, Muscular Sense, Sense of Temperature (Heat and Cold), Corporal Sense and Coenæsthesis. The "tactile sense" is found to be properly a combination of two sensations of different classes, *viz.*, pressure and muscular sensation. It is, how-

ever, entitled to rank separately, both on the psychological ground of the intimate union of the two heterogeneous sensational qualities, and on the physiological ground that the parts most sensitive to touch do not coincide with the parts most sensitive to pressure. Sight and touch are characterised by comparative slightness of tone. The muscular sensation is the "feeling of innervation". Physiologists, not altogether wrongly, oftener speak of "muscular feelings" (*Muskelgefühle*) than of "muscular sensations" (*Muskelempfindungen*); for the sensation, as a complex, has something emotional in it. The tone of the muscular sense, that is to say, goes beyond the limits of the ordinary "tone of a sensation," and approaches "feeling" properly so-called. The "corporal sense" includes a great number of disparate senses, characterised by prominent tone even when their intensity is low. It may, perhaps, be an aggregate of residues, retarded in development, from the primitive total sensibility out of which the special senses have become differentiated. The common organic sense, or coenæsthesis—which ought to be called "organic feeling" rather than "organic sensation"—is the total impression of all contemporaneous sensations. It consists of unlocalised corporal sensations (sometimes identified with it); sensations of temperature and pressure so far as they are less toned and appear in greater masses; muscular sensations so far as they remain isolated; sensations of tension or "disposition" of the organs of sight and smell; odours and tastes and (rare) colour- and sound-complexes that are brought into relation with no determinate object of the external world. The common organic feeling is "the psychical expression of the life of the body," "the somatic basis for the unity of self-consciousness".

Movements, *i.e.*, bodily motions conditioned by stimuli of motor fibres, are divisible into Actions, Instinctive Movements and Reflex Movements. The ground of excitation of an action is a determinate act of will; of an instinctive movement, some other psychical activity; of a reflex movement, some nervous stimulus outside the soul. An instinctive movement, accordingly, may have for its stimulus either (1) a presentation or (2) a feeling. Since presentations can only set movements going by the intermediation of associated muscular sensations, and not, like feelings, directly; and since the muscular sense has itself the character of a feeling; the difference between the two kinds of instinctive movement is not "specific". The second class of instinctive movements shades off into reflex

movements. The explanation of the first is essentially similar to that of voluntary movements; the essential thing in each case being the production of appropriate muscular feelings in sufficient strength and precision. Voluntary, instinctive and reflex movements, as Volkmann shows after earlier psychologists, may be transformed into one another in either direction.

Fuller treatment of Instinct as well as of Will is postponed to a later division of the work; but as a supplement to his account of the motor elements of the mental life, Volkmann sets forth the theory of the origin of Language. Words, he finds, were originally the product of an instinctive movement of the second kind, that is, of the kind that has feeling for its stimulus. A sound uttered under the influence of an emotion, as soon as it calls up in the mind of the hearer the idea that is in the mind of the speaker, becomes a true "word," that is, a sign, having hitherto been a mere "natural sound". Emotion, having performed its part in facilitating utterance and understanding, is eliminated, and the instinctive movement exchanges the form of the second class for that of the first. Finally, as the various series of ideas and movements fall under the dominion of the will, the utterance of words becomes an "action". Before the first, or "pathognomic," period of word-formation is completed, the second, or "onomatopoetic," in which sounds that are heard influence the formation of words, has begun. After the first two periods—the period of the "natural sound" evoked by something that excites emotion and the period of "imitation of nature"—comes the third, which has been called the "characterising" period. Its activity consists in finding the sides of new impressions by which they may be brought under the categories of old, already fixed presentations. It is further considered by Volkmann in his view of the Concept.[1]

The Herbartian theory of "the interaction of presentations" is in essentials adopted by Volkmann, but not without differences of theory and of terminology. Volkmann, for example, speaks of the "fusion" of heterogeneous presentations, while Herbart calls their union "complication," confining the term "fusion" to the union of homogeneous

[1] With Volkmann's acceptance of the position that the uttered sound becomes a "word" from the moment when it is *understood* may be contrasted Wundt's position (*Phys. Psych.* 2nd ed., vol. ii., p. 433) that language is constituted by the *intention* to convey a certain meaning; that it exists from the moment when the original "impulsive movement" becomes a voluntary movement.

presentations. The term "threshold" employed by Herbart as a name for the limit below which presentations sink when they become "obscured," Volkmann rejects. He maintains the ideas of "mechanical" interaction of presentations and of the application of mathematics to this interaction; but he is willing to allow that the results of mathematical calculation are not always empirically verified. The concluding section of the first volume contains, indeed, considerable admissions as to the Herbartian "mathematical psychology," and may almost be taken as a confession that the experiment of applying mathematical calculation to the interaction of mental states, though worth trying, has not yielded the definite and verifiable results that were looked for.

The starting-point of the theory of Interaction is the notion of "a plurality of simultaneous presentations". The simplicity of the soul, it is maintained, is not inconsistent with the separate origin of simultaneous presentations; but it is quite irreconcilable with their continued separate existence. The fundamental law of the interaction of presentations, therefore, is: Simultaneous presentations fuse. Presentations may be either "like" or "opposite" or "heterogeneous". The fusion of like and of heterogeneous presentations offers no difficulty. The difficulty is to explain the fusion of opposite presentations. Its solution is contained in the proposition: Simultaneous opposite presentations arrest one another and then fuse; that is to say, they put out of action so much of their presentative activity as opposes union, and unite the rest in a total act. This leads to the Herbartian theory of the mutual "arrest" of opposite presentations and of the fusion of "residues". The application of mathematics in working out the consequences of arrests and fusions depends on the distinction of intensity (or quantity) from quality of sensation, and on the numerical expression of "degree of contrariety" as well as of intensity. To consciousness, "arrest" announces itself as diminution in clearness of presentation. The degree of arrest is measured by degree of diminution of clearness. When the whole activity of a presentation is bound, the presentation is said to be "obscured". The intensities and degrees of contrariety of the interacting presentations being known, and the relations of these quantities to the total arrest and to the arrest falling on each separate presentative activity having been formulated, the conditions of obscuration are calculable. Sensations, since they are composed of simple states, are determined in their internal as well as (approximately)

in their external relations, according to the laws of fusion and arrest. Simultaneous heterogeneous presentations fuse into a total presentation—the "complex idea" (as Volkmann remarks) of English psychology. This means that their presentative activity becomes a "total presentative activity" while they themselves persist in their qualities and degrees of clearness. Of total presentations those are said to be "complete" *(vollkommen)* whose constituent partial activities enter into union unarrested. When these have been deprived of some of their intensity by arrests, the total presentation is said to be "incomplete" *(unvollkommen)*. Under favourable external circumstances the incomplete total presentation may become complete. Partial presentations of the same total presentation are to one another "aids"; that is to say, they support one another in the bearing of the arrest. The gain by fusion is greater for the weaker than for the stronger partial presentations of the same total presentation. Older presentation-complexes, in consequence of their "internal rest and consolidation," have an advantage over presentations that have just entered consciousness.

Arrest and fusion are, in reality, processes. They do not take place all at once, but gradually. The presentation, therefore,—or rather the presentative activity,—is said to have a "motion". This admits of only two directions, *viz.*, "rising" and "sinking". All motions of presentations take place between the highest point of the original activity and zero; the possibility of rising only exists for a presentation that has sunk below its original intensity. Comparison of the motion of points in space with the "motion" of intensities of presentative activity shows that the velocity in the latter case is always to be thought of as diminishing. The motion of a presentation can be completed in no finite time, but a presentation may be obscured in a finite time. For if the lowest point to which the presentation must sink, in order to reach the limit of its motion, is below the limit of its activity—that is to say, if its share in the arrest is greater than its own original activity—then the presentation needs, indeed, an infinite time to reach the lower limit of its motion, but passes its own limit of intensity, the horizon of its consciousness, in a finite time. The laws of motion naturally become more complicated when presentations are supposed to arrive successively, instead of simultaneously. A presentation may be kept indefinitely near its maximum by the persistence of a physical stimulus or by the activity of psychical "aids". The term "fixed pre-

sentation" is applied to a sensation indefinitely near its maximum and sustained at this height by persistence of the stimulus.

At the end of his treatment of the interaction of presentations, Volkmann has a section on Sleep. The somatic conditions of sleep, he finds, are (1) isolation of the brain from the other parts of the nervous system, both on the side of external stimuli and on the side of innervation, and (2) disengagement of peculiar corporal sensations in the soul. These sensations, marked by low intensity, great number, increasing "fixation" and a high degree of contrariety to homogeneous presentations, exercise pressure on these directly and indirectly on all others; thus adding their positive influence to the negative influence of isolation in bringing about the general obscuring of consciousness characteristic of sleep. In sleep as a process five stages are to be distinguished — "sleepiness, going to sleep, deep sleep, sleep with dreams, waking". In deep sleep "the light of consciousness has scattered itself upon so many atoms that it becomes in each a vanishing quantity". The subject of dreams is resumed after the principles of the theory of reproduced presentations have been set forth.

The return of the obscured presentation into consciousness is called its Reproduction. The reproduction of a presentation takes place by suppression of the arrest that obscured it; and thus either "immediately," by its own force, on the disappearance of an opposite presentation, or "mediately," by the force of an aid, in spite of opposition. As the mediate reproduction of one presentation has the immediate reproduction of another, namely, the "aid," for its presupposition, immediate reproduction is the simpler case.

There are two forms of immediate reproduction. The first form occurs when a presentation is reproduced, not because of the entrance of a new presentation which removes the arrest, but because of the disappearance of the opposition from other causes. This disappearance may be due either to withdrawal of a stimulus or to cessation of an act of voluntary attention. In either case, the returning presentation is called a "freely ascending presentation". On account of its velocity's becoming gradually less in the measure of its ascent, the freely ascending presentation never quite reaches its maximum height. It usually remains far below the maximum. The second form of immediate reproduction has its ground in removal of the opposition by the entrance of a new presentation qualitatively like the obscured presentation. The arrest due to opposition

being removed, the obscured presentation ascends by its own force.

The second of the two forms of immediate reproduction may be found by self-observation in the phenomena of recognition. The theory of freely ascending presentations, on the other hand, contributes to the explanation of reverie, and enables us to take up again the thread of the phenomena of sleep at the point where it was dropped. When the "somatic pressure"—the arrest due to the corporal sensations disengaged during sleep—is taken off a limited region of the psychical life, the obscured presentations belonging to that region are set free to ascend. Their ascent constitutes a Dream. Dreaming is thus a partial waking, which ends with complete waking when the pressure taken off one circle of presentations is taken off all. In waking life, on the other hand, to be completely given over to a single circle of presentations has something dreamlike in it. Another element of dreaming is introduced by those corporal sensations of which the stimuli break through the isolation of the central organs from the periphery. This breaking-through disturbs the motions of the free presentations, and is most prominent in morning-sleep. Dreaming, according to Volkmann, has a certain advantage over the waking state in its internal unity; the presentations of a dream appearing in their intrinsic relations, and detached from the accidents of daily life. This, in his view, explains the "prophetic significance" of some dreams. At the same time, by reason that the pressure of cœnæsthesis is only taken off a single circle of presentations, dreams have a characteristic one-sidedness, resembling the life of animals, with their more limited range of sensibility as compared with man, and the predominance in them of particular senses. Somnambulism is best explained as a morbid exaggeration of this one-sidedness.

The ascent of one presentation—however determined—has for its consequence the raising of all presentations fused with it. Thus, when one partial presentation is immediately reproduced, the mediate reproduction of the total presentation follows. In general, the mediate form of reproduction is behind the immediate as regards both velocity and height; the more so as the mediately reproduced presentation ascends not in consequence of the yielding opposition but in spite of the opposition that has not yielded, and as the arrest that is thus unavoidable lowers both the velocity of ascent and the maximum height. When both modes of reproduction work together to raise the same presentation, the presentation ascends not with the accumulated velocities but with that

which is the greater, because in the fulfilment of one motion satisfaction is implicitly given to the demands of the other. The law of mediate reproduction furnishes the basis for the theory of "signs"; for sign and thing signified are heterogeneous; what holds them together is "fusion".

The correspondence of the theory expounded above to the doctrine of Association of Ideas is pointed out by Volkmann, and is indeed sufficiently evident. The second form of "immediate reproduction" is of course "association by resemblance," while "mediate reproduction" is "association by contiguity". Volkmann contends that the Herbartian method of formulation is preferable to the English, because it begins with the problem of obscuration, instead of inquiring into the conditions of the return of the presentation before those of its disappearance have been understood.

After setting forth the general laws of the reproduction of presentations, Volkmann enters into the doctrine of the "presentation-series,"—defined as "a presentation-complex which, in consequence of orderly fusions of its constituent parts, possesses the capability of raising these, during their reproduction in determinate order, to their full degrees of clearness". The serial form may be described generally as the form in which successive presentations are reproduced when their succession is not too slow, and when there is not too great want of uniformity in the qualitative relations of the successive terms. Simultaneous presentations, as well as presentations originally in serial order, may assume, when reproduced, the form of a series. For this to take place, there must be regular gradation of degrees of fusion; and this appears in similar presentations when, with identical quantity, their qualities are separated by a regular gradation of degrees of contrariety. The form of a series is assumed, for example, by colours, tone-qualities and logical species of the same genus. Series of which the repetition merely by reproduction is possible become shortened with time; series that have to be reconstructed on each repetition become lengthened by the taking in of details at first overlooked.

Each pair of fused presentations may be compared, as a structural unit, to the organic cell. Similarly, the presentation-series may be compared to the organic fibre. Series, like single presentations, arrest one another so far as they are opposed, and support one another so far as they are like or fused. A series may consist of subordinate series. Series are "divergent" when they have the first term in common, "convergent" when they have the last term in common;

when they have an intermediate term in common they are said to "cross". If a series leads the way to divergent series, it is said to "divide"; if it follows the convergence of series, the converging series are said to have "united" in it. By the insertion of intermediate series, crossing may be avoided. Series may become interwoven into "tissues". Examples of such interwoven series are the arrangements of colour-series in a surface, of concept-series in a science, of the series of particular sciences in the scheme of universal knowledge. These "tissues" made up of presentation-series are comparable to the tissues of an organism.

In the course of the treatment of Series, an explanation is given of the fact that the longer a presentation has been obscured the more difficult it is to reproduce. The explanation is this: Voluntary reproduction does not as a rule come directly upon the presentation to be reproduced, but has to call it up by series of "aids". Now, the longer the time during which the presentation has been obscured, the greater is likely to be the length and complication of the series of steps by which it must be arrived at; and so the more difficult it is to reproduce. For immediate reproduction, the length of the period of obscuration is irrelevant. Hence, if voluntary reproduction can take this form, there is no difficulty depending on the length of time that has elapsed since the presentation was obscured.

"Sensation" and "reproduction," as has been seen, are names given to different periods in the history of the same presentation. The presentation is called a sensation from its development to its first obscuration, a reproduction from its return into consciousness to its next obscuration. What, then, are the empirical characters by which these phases of the presentation are distinguished? In other words, what is it, psychologically, that the continued presence of the somatic stimulus confers upon the sensation? The difference between sensation and reproduction cannot be in the quality or content, which is the same in the two cases. The "weakness" of the reproduction in comparison with the sensation, its falling off in clearness, which was taken by Hume as the criterion, is not sufficient. It is, in Volkmann's view, the greater tone of the sensation as compared with the reproduction that constitutes its most distinctive character. In the reproduction, the tone, so far as it depends on relations of the elements of the sensation to one another, has almost disappeared. The reproduced presentation, as feeling, is no longer pleasant or unpleasant, but indifferent, until it has formed for itself a new pleasurable or non-pleasurable feeling by interaction with other presentations.

If we call that property of the sensation that proceeds immediately from its tone, or mediately from accompanying organic sensations, its "liveliness," then want or diminution of liveliness is the criterion of reproduction as opposed to sensation. Liveliness is to a certain extent communicated to the presentations reproduced by a sensation. A second character distinguishing sensation from reproduction is that the sensation is "fixed" by the stimulus, that it persists in opposition to the will. Only of secondary importance for the distinction of sensation from reproduction, this character becomes of more importance for the distinction of the reproduction of a sensation from the reproduction of a reproduction.

The account of reproduction as a psychological process concludes with a discussion of Memory and Imagination. These, Volkmann points out, are not to be viewed as "total forces" by which "the mind" calls up particular phenomena. The question for the psychologist is, What are the real processes of interaction of mental elements to which the terms are, respectively, applicable? On any view, the contrast between (1) the tendency for presentations to be preserved in their original integrity and fusions, and (2) the tendency for them to be set free from their old combinations and placed in new ones, has to be recognised. From the point of view of the theory of interaction, therefore, every presentation may be said to have its "memory" or its "imagination," according as it strives after the recovery of old or the formation of new combinations. Traditional terminology being used, memory may be divided into "memory in the narrower sense," or the striving of presentations after immediate reproduction, and "recollection," or the effort of a presentation to bring others to mediate reproduction; both being included under "memory in the wider sense". The classification (proceeding from Kant) of memory into "judicious," "ingenious" and "mechanical" also admits of interpretation in the Herbartian sense. It is especially in the fusions of "freely ascending presentations" with one another that the new combinations of imagination are formed. The characteristic of imagination is "newness"; but a whole becomes new either by leaving aside of old or by addition of new parts or by union of both processes. This gives the division of imagination into "abstracting," "determining" and "combining". Imagination does not receive its true life and colouring till it comes under the influence of emotions and desires. Under this influence it rises into "Phantasy".

The exposition will be resumed with Volkmann's second volume.

III.—THE LOGIC OF THE ETHIC OF EVOLUTION.

By William Mitchell.

I.

The Ethic of Evolution is usually so much concerned with exhibiting its ability to harmonise the traditional conflicting answers to various questions that it is apt to forget the reason that gave birth to them and the purpose which their solution ought to accomplish. The direct problems of any science require answers to many questions that do not directly concern it; and the primary problems of so complex a thing as human conduct require the solution of many subsidiary matters. In the history of ethics it has often happened that these subsidiary questions have appeared to be the whole matter of investigation, and, as often, it became very natural to aim at harmonising the answers that were given. But the harmony must be shown to give a fact or postulate to ethics, as the conflicting answers sought to do, in order that it may not be merely an abstract statement of the common—and, therefore, unessential—element in them. I propose in this paper to emphasise the logic of ethics which sets the questions to be answered, and to examine the answers that are given in what is usually regarded as the ethic of evolution.

The logic of ethics is the logic of every practical or constructive science. Inductive logic is concerned with the relation of cause and effect, and the various methods of getting at the actual causes and effects in the complex sequences which we have in nature. As this relation is to be found in every sequence, and everything is in sequence, a science based on this relation alone can be found for everything,—the operations of minds, as well as the operations of nature. But there is another relation in certain of these operations as well as causality. The operations of intelligence have put quite a new face on nature from that which it would otherwise have had. This is due to the selection of desirable effects; and, therefore, also the selection of causes to produce them. A selected effect is an end, and the means are the causes required to produce it. The question does not here concern us whether or not intelligence and its operations on nature are themselves natural

products. The point simply is, that intelligence is able to discover ends for institution in nature, and to realise them wherever the requisite means can be found.

The logic of the constructive sciences is, then, the logic of end and means; and it requires, in the first place, that the end be desirable, and, in the second place, that its realisation be possible. The relation of causality is, of course, implied in that of means and end; but it is a fatal error to give the final explanation of morality under this category. To take a precisely analogous instance from another constructive science, we might explain every principle and detail of the Forth Bridge at infinite length by reference merely to the physical and chemical laws of nature, whereas the essential thing is the selection of them. Hence, the true logic of the ethic of evolution is concerned with the selection—the natural selection—of human characters and institutions,—a selection which, when properly interpreted, is expected to reveal the rational ground of selection for all future practice. Except to the systematic writers on the subject, however, the essential matter does not appear to be this, but the apparently wonderful fact that morality has varied indefinitely for different circumstances and peoples. Several conclusions are usually supposed to be given by this discovery, and of these I select the two that affect the logic of ethics. The one is, that, as the knowledge and practice of morality have varied and will continue to vary, morality cannot be absolute, and a science of morality which exhibits it as permanent is essentially erroneous. The other is, that the true method of ethics is to adopt, with the other sciences, the rule, Be true to nature, and to build a system from the facts that history has revealed, instead of pursuing the old way of making facts square with a theory of which they ought to form the test.

The former of these statements,—that, because morality is relative to character and circumstances, the theory which represents it as absolute is necessarily erroneous,—is due to a confusion which at once reveals itself if we consider the general case of all truth. If morality is said to be relative to character and circumstances, all truth must be said to be relative to the same extent and for the same reasons. But it is a very obsolete kind of scepticism to say that, because opinions have varied about what is true, truth is not absolute, or cannot be known for certain. If men can be thoroughly convinced that their errors are truths, why should it be wonderful that they have erroneous convictions about moral actions, since these form only one of the cases

of the general fact? Truth itself is permanent; it is only the consciousness of it that varies and develops or is evolved. Therefore, although the knowledge and exercise of morality have changed and grown, it is not to be inferred that there is no true or permanent system of practice. The consciousness of all truth depends on the intellectual character and its environment or means of investigation, just as the consciousness of moral truth depends on moral character and circumstances. But if it does not follow in the one case that there is no criterion to test the truth of our knowledge, why should it be inferred that we cannot discover the permanent truth about the laws of human actions? It may very well be argued, as by Mr. Spencer, that the true system of morality can only be incompletely discovered and imperfectly realised till an ideal future time; and that, meantime, ethics is relative to non-moral limitations. But this, so far from denying, asserts an absolute system of morality, and the question of the possibility of realising it is one of the two matters which, as we saw, logically fall to be investigated.

The second popular statement presents a similar confusion. It points the moralist to the abundant facts of morality that historical and biological research has accumulated, and asks him to adopt the rule of being true to nature—by which the natural sciences have developed so greatly,—in order that his theory may be based on fact, instead of fact on the theory. Now, in the lower animals the self-regarding and the species-regarding impulses appear in harmony—to, at any rate, as great an extent as the members of either kind of impulse harmonise with one another. Such animals are true to nature,—to the nature they have received. But the necessity for a doctrine of morality just arises because in man the self-regarding and the species-regarding causes of action have come to consciousness and appear in conflict. In primitive races, where the distinction is little marked because instincts are little questioned, the instinctive rules of right are held on the assumption of the harmony, if not identity, of these kinds of impulse. Similarly, it is the rule among civilised peoples that the traditional rules of conduct are instinctively rather than rationally accepted. These savages and socialised peoples are also true to nature,—to the nature they have received,—and make their lists of the laws of morality from data that they have merely accepted. But to elevate this procedure to an ethical method is to make it impossible for morality to have a logical foundation at all. The rule, Be true to nature, appears so excellent and easy that there is nothing more tantalising than the glibness with

which the censors of the progress of knowledge urge it on philosophy. The nature to which the moralist must be true is not given, and the nature that is given is just the nature that he must correct. In the given nature, no doubt, lie the means for realising that which ought to be; but the selection of the means is the very problem that the moralist has to solve. It follows, as every student of moral theories knows, that, so far from alleged facts or beliefs determining the theory, it is rather the theory that has read or determined the fact. And, so far from this apparent reversal being illegitimate, it is the only logical procedure. Not, as I have repeated, that men and society may have any possible constitution; but neither also that the constitution which they ought to have is to be directly selected or inferred from that which we find them possessing. A comparative examination of the varieties of morality—including, if you like, the practice of the lower animals—cannot give the laws of morality as it ought to be, without implicitly asserting a theory concerning the grounds of selecting and valuing one kind of action to the prejudice of another. For the different determinations of morality that we find among various peoples at various times may in this reference be described as the more or less instinctive compromises which men have formed to mediate the claims of the self-regarding and the species-regarding impulses. We may collate these compromises to find the elements of success and the causes of failure, but we can find nothing to the purpose without having first answered the question, in what success and failure consist.

Thus the dictum, Be true to nature, does not furnish the data and criterion to ethics—or, indeed, to any of the constructive sciences—as if it were merely analytical. In all these sciences a selection is made in view of an end, and the dictum simply implies that the end must be such as the means can realise. In this sense the ethic of evolution may properly enough claim to make a better adherence to nature than other theories,—say, than the two traditional antithetical doctrines. Thus Mr. Spencer contrasts his method with Utilitarianism in treating happiness as a necessary, not an accidental or empirical, product; and Mr. Stephen opposes himself to Kant, who regards the law of morality as something to which the nature of men and things in this world cannot be accommodated. But this only shows more clearly the necessity of a strict adherence to the reasoning of the constructive sciences,—the logic of end and means. Let us consider, then, in the first place, what constitutes the

desirability of the end proposed by this theory, as the end of human practice; and, in the second place, how its realisation is possible.

II.

The purpose of ethics is the discovery of a system of laws which ought to be accepted by each and all for the regulation of their conduct. Two things are thus required. In the first place, the laws must be deduced from, or justified by, a common ground, embracing the relations of which they are supposed to be the true expressions. In the second place, this system of laws must recommend itself to individual agents in order to be the motives of their actions. Every ethical theory that is not professedly sceptical undertakes to satisfy these two conditions. About however many courses of conduct they may severally confess themselves in doubt, they all profess to give the principles which will remove the difficulty. And however some theories, including that we are considering, disclaim the possibility of recommending their laws to men of imperfect character, they all profess ability either to reform or to eliminate such characters.

The division which from the first separated moralists into two general classes is due to the difficulty of harmonising the two requisites mentioned. The one school began by making morality absolute or universal, and then found its difficulties in converting the universal rules into personal motives without the introduction of an extraneous *tertium quid*. The other school, beginning by saying that the only thing one desires is pleasure, found its difficulties in formulating a universal system of conduct that would always be the means of realising this desire. Now the ethic of evolution claims to overcome the difficulties of both schools, and, in doing so, to remove the hypothetical character of the ethical postulates. In other words, it professes to satisfy the two conditions of the possibility of morality, and thereby to convert this possibility into an actuality or law of nature. The previous moralists erred, it says, in neglecting to investigate the causes, and especially the relative character, of pleasure. The rational moralists, it would say, merely found that virtuous action is always attended with happiness, and could only regard it as an unfortunate fact that men found wrong actions also to be desirable. The utilitarian school, too, it says, accepted pleasure merely as a result, and, failing to investigate its cause, left the estimation of pleasure to an empirical and nearly impossible calculation.

It is questionable if the ethic of evolution has added much to what was previously known of the causes of pleasure, but its investigation goes far enough to accomplish the essential purpose, *viz.*, to pass from pleasure to what *ought* to give satisfaction as the criterion. Thus, it is the optimistic argument of Mr. Spencer that the virtuous action is the happy one, since the right course is that which, having survived the struggle of contending courses, has been longest in operation, and since pleasure attaches to the exercise of any function that has been sufficiently long exercised. This short and easy method with the pessimist no doubt requires many a qualification; but there is left untouched this truth—that pleasure accompanies the exercise of every function that has come to be incorporated in one's character, so far as its exercise is unimpeded. Now, if the action of society is to eliminate all characters that are inimical to itself, it follows that, *ceteris paribus*, those pleasures are better which attach to functions whose exercise receives no check at the hands of society, and those are best of all which attach to a function whose exercise society not merely admits but rewards. The conditions, then, of an absolute or universal morality recommending itself to individual agents are satisfied by making the ethical end a perfect character acting in a perfect social medium. A perfect character is one that, in the first place, consists of harmonious desires only, and, in the second place, possesses the full complement of them. A perfect social environment is one that, in the first place, has no element contradictory to the exercise of a perfect character, and, in the second place, directly fosters such exercise. It is a far cry, however, to the institution of this character and medium in which benevolence will tend to be more selfish than selfishness itself. Consequently, for men as they actually exist the argument takes a more modest form. So far as a character conforms to its environment, whether good or bad, so far the pleasure which it can gain is greater than if it did not, other things being equal. An environment and character are better, then, the nearer they approach the perfect condition. If a man's character be bad —if, that is, he have little desire for the objects which society approves, and find the pleasures which it condemns most desirable—morality cannot recommend itself to him by its pleasure-giving qualities. Yet he cannot but admit that the moral course is best for those who can take advantage of it.

The proposed end, then, does not require to be placed in the distant future, or to justify itself by proving that it is

what things will come to. This is, no doubt, how the matter is frequently represented by Mr. Spencer, and the criticism of his theory has usually been made on these two grounds. But others—and, notably, Mr. Stephen—propose to satisfy the two conditions of the end without placing it in a hypothetical future, or justifying it to us for the sake of our grand-children in the n^{th} generation. The improvement of the tissue of the social organism, whereby better characters and a better environment are realised, really satisfies the conditions. It dictates an absolute system of moral laws, and shows the realisation of them to be pleasant for the characters that are equal to it. The theory sets a very awkward limit, indeed; but this does not concern the end, but the means of realising it.

An ethical end must not merely recommend itself, and imply a universal system of morality: it must be capable of supplying a criterion for particular courses of action. It cannot accomplish this if it abstracts from the reference to any of those elements for which it proposes to prescribe the laws. Though the progress of knowledge may be said to be by generalising, this is the lesser half of the truth of which the other is that we generalise in order the better to particularise. A theory, then, that does not regard men in abstraction from their environment, as if it were accidental, may so far be expected to state more concrete—and, therefore, more serviceable—laws than theories which do. The medium of life is an essential part of life itself, so far as no other medium would do equally well. Similarly, the laws of morality, which are the maxims of a perfect character, must contemplate the medium which renders their action possible. Now, though all theories claim to do this, they do not all represent the good of society as itself an element in the end for every man and not merely a means to it. The ethic of evolution, however, urges the individual to act for the good of society, not because he cannot otherwise reach his own best good, but because this is itself absolutely desirable. In a manner comparable to Kant's conception of a kingdom of ends, it seeks to co-ordinate the individual and the social good, and commands the agent to acknowledge the obligation of acting for the good of society, however little it promises him. The reference for the individual is never to what he desires, but to what he ought to desire; and moral laws are established when it is shown that by their means the social tissue is maintained and strengthened.

Unfortunately, this is usually read as if man existed for society, and not society for him. It appears all the more

strongly when this view of morality is justified merely by reference to the non-moral condition of animals, in which the species is maintained by the sacrifice of individuals. But to the moral being—to one who claims the right of bringing all ends and motives to judgment—even this end of the maintenance of the species must appear not as an external condition or arbitrary rule, but as an object of desire. It is only in this way, too, that such problems as the treatment of the weaker members of the community can be made adequate. It is frequently argued, in opposition to the theory, that, if the good of society is the criterion of right, the proper treatment of the poor, the ignorant and the diseased, is to make their lives as difficult as possible, by letting their affliction exercise its full effect. To reply that this would weaken the moral fibre of the others is either to say that it is a pity the moral law cannot be properly enforced, or to admit that the law is not adequately expressed by this criterion. If it had any force, the argument might be added that a struggle for existence does not express the relations even of non-moral animals to one another within the same species, since they expend energy in support of members which cannot be supposed to give an adequate return for the benefit of their kind. I have pointed out that this is no reason in the world why *we* should support the weak, if we could get rid of encumbrances like our pity for their distress and our shame at neglecting them. But the conclusion evidently is, that the criterion 'good for society' is itself deduced, and can be properly interpreted only when we are informed what society is good for.

The nature of any community is determined by the prevailing character of its members. Its institutions—laws, customs, current opinions—are the impress of this character upon nature. Society is simply externalised character, and it should appear not as an unfortunate limit to one's action, but as the requisite medium for the exercise of all those higher functions that would otherwise deteriorate or die. The good of society as the ethical criterion, therefore, means the institution of a medium which shall reflect, as a more perfect external character, the more perfect character of the individual. Further, the practice of men has to be regulated in view of the limits set by nature, which yields desirable objects only after considerable pressure, and then not to an indefinite extent. By social combination nature is induced to yield the greatest possible quantity and variety of the objects of desire. The progress of the physical medium

thus keeps pace with that of the social medium, and reflects the same purpose—to increase the desirability of the individual life.

Hence the law of morality is the true expression for the various relations of human life. It seeks to determine them as means that can become objects of desire to a perfect character. For this, the only 'moving equilibrium' that ethics demands is the removal of friction between the interests of the individual and the interests of the species,—not the utopia of Mr. Spencer's Absolute Ethics. There is thus an identical interest for all men,—the realisation of a perfect character for themselves and their environments,—and this fact gives the first or ultimate predicate in the determination of the rightness of every action. It is, of course, also the most general and meaningless predicate, constituting the virtue called Justice, stating merely that men have equal rights without defining them. The further determination of right actions, all of which are in the first place just, must, however, be made through this predicate, by a more concrete reference to the relations which men ought to have to nature and to one another. It is obvious that the true expression of these relations gives the laws for the improvement and consolidation of the community. The following illustration must serve to show the difference between this interpretation of the system of morality and that which regards it as constituted by the merely external criterion.

A desire whose exercise places a burden on the other members of society is, of course, to be repressed. The marriage of people with congenital deformities is an example, but neither the desire to support the afflicted in comfort nor their desire to be thus supported. The exercise of benevolence in cases where no adequate return can be made to the community certainly entails more labour on, or admits fewer material enjoyments for, the strong; and if society be regarded as a means whereby the spoils of nature may better accrue to the spoiler, such support can only be given with a grudge and received with shame. But it is an imperfect view of the case to say that the presence of this element is undesirable to other than the sufferers themselves. The misfortune spreads to the strong only when the additional labour becomes undesirable by preventing the realisation of other desires. This view does not seek to conserve the ills of life for the sake of getting scope for the satisfaction of altruistic desires, as if a character could not be perfect that had not wretched objects to exercise its sympathies upon. But it does mean that, where the presence of these ills is

inevitable, a character and society are imperfect which ignore them or fail to find satisfaction in alleviating them. The good of society cannot be determined without assigning an interest in the spoils of labour to those who cannot forage for themselves. They bear into society a natural burden that no arrangement can eliminate, and to regard their presence merely as an evil to be crushed would be to undermine the stability of society. The logical issue of the argument would imply the diremption of society into classes or castes and the consequent apotheosis of selfishness. It is not a medium of this sort that can be the correlative of a perfect character.

These considerations do not profess to make the evil good, any more than they would prove it to be a good thing that nature presents obstacles to the exercise of every human function. But they do profess to expose the absurdity of saying 'It's a pity,' when neither the intellectual, nor the æsthetic, nor the practical character can have their complete satisfaction unless they include elements that respond to the darker as well as to the smiling face of nature.

The two conditions of an ethical end,—that it be the motive of individual action and furnish a critical system of universal laws,—are thus fulfilled by the end variously propounded in the ethic of evolution only if it be represented not as an external limit forcing itself on men, but as presenting a more desirable character and medium to the individual than any other. This is also rendered all the more necessary when another ethic of evolution, the Pessimism of Hartmann, represents nature as endeavouring by wile and glamour to induce us to realise a purpose that is essentially undesirable. And, for that matter, men became moral beings by questioning the value and scope of the altruistic instincts that are present in all non-moral beings. But we have yet considered only the relation of a perfect character to its proper medium, that is, as if already naturalised; whereas the much more essential question relates to the means of realising the desirable end. Only thus can we establish the laws that ought to regulate the relations that we actually find naturalised—namely, a less perfect character in a more perfect medium; a more perfect character in a less perfect medium; and both the individual and his medium highly imperfect.

III.

When a moralised and an unmoralised character issue in the same right action, the difference lies in this, that the

one agent finds the desire to perform the action to be itself desirable, while the other is influenced by extrinsic considerations. This is the distinction between morality and mere prudence; between morality as an end and morality as a means. The problem of the ethic of evolution is to convert the one into the other,—to show how the morality habited in, or rather required by, the environment only, becomes naturalised in the individual character. The psychological explanation given is not peculiar to the theory, but harmonises with the general explanation given of all progress. The constant or persistent principle is, that the conscious motive of every action is what the agent regards as his greatest or least difficult pleasure. Variations in character are caused by the interaction of the medium and the current character. Finally, from the historical point of view, we have heredity, variations in transmitted characters, and the increasing economic and social necessity for a more complete correspondence with the environment. We may omit these somewhat historical explanations, as they derive their value from the two preceding principles. The one is, that pleasure is the object of desire; the other, that desires can become more social only by the external medium either directly preventing the selfish pleasure being reached or indirectly accomplishing the same purpose through setting up a contradictory desire.

The time-honoured objection to pleasure being regarded as the object of desire is, that if it be made the end of action, it will be less than if not consciously sought. The ethic of evolution does not seek to obviate this by re-introducing our original ignorance of the real object of our desires. It says that the objection holds only when pleasure attaches to the consequence of the action, but is removed when the action itself is pleasant. The man of moralised character is he who no longer regards a right action as so much unfortunate necessity to be discounted from the pleasure consequent upon its performance, but finds in the exercise itself a positive source of additional happiness. In the language of those who brought the charge against the thesis, the practice of altruistic desires is itself 'original joy'.

All moralists since Aristotle—even the Stoics and Kant —expressly say that the truly virtuous character is one that delights in its virtue. It may also be very well said that virtuous men are the best pleased of all men. It is quite another thing, however, to suppose that their actions are performed for the sake of the pleasure or delight. If they were, the pleasure or delight could be compared and valued

with others, and the consequences we shall see to be fatal. If, on the other hand, the pleasure or delight is *sui generis*, it does not derive its value from the pleasantness of the feeling which it may be described as possessing in common with the rest.

What is the result if the moral pleasures must justify their superiority by appearing more pleasant than others? In the first place, where virtuous desires are weak or absent, they cannot be induced by this means. In the second place, if they are really incorporated in the character, they will be inevitably degraded and lost by their exercise being sought for the sake of the pleasant feeling that will immediately or ultimately follow. Let us examine the four kinds of relation between the individual and society according to the relative perfection of each. (1) There is the man of imperfect character in an imperfect medium, the exercise of whose immoral desires goes unpunished by any physical, political or social restraint. He can obviously reply to a possible adviser that his pleasures are keener than they appear to one of a more perfect character, and that the pleasures attaching to virtuous desires could be but slight to him, and would entail much pain for a long time. (2) Suppose the exercise of his imperfect character is obstructed by the restraints of the medium, he can only resent their action as unfortunate interference, to which he succumbs with a grudge, after seeking to evade them. The theory thus prevents or delays his conversion from prudential to real or spontaneous morality. (3) There is the case of the character being more perfect than the social environment, which obstructs the exercise of true morality. This is by no means an uncommon relation, and has exercised great influence on the progress of society. But, so far as the individual agent was concerned, it meant more or less of martyrdom. It may be truly enough said that the martyr delights more in exercising his virtuous desire than in exchanging it for many, or all, other pleasures; but we cannot at once proceed to the conclusion that, because it pleased him better to act as he did, he, therefore, took his course for the sake of the pleasure. We could hardly admire his intelligence if he did. By whatever means his virtuous course commended itself to him, it could certainly not be by beating so many, or all, other pleasures on their own ground. Finally, (4) even in the case of a perfect character and medium—though we have seen these to imply, or even to be defined as giving, the most varied and complete satisfaction—to make the pleasantness of the course either the conscious or unconscious motive is

to introduce an element fatal to their stability. This follows even if the agent were cunning enough to escape the every-day consequence of making one's pleasure the object of desire, namely, the loss of all desires, or the *ennui* which this prostitution involves. For the superiority of the perfect character is, that it delights in the means, as well as in the results, of action; in other words, that the pleasures attaching to the approval—and, consequently, the pains attaching to the disapproval—of conscience are extreme. But, if conscience be regarded as merely an instrument of pleasure and pain, it will gradually fail to produce them. Just as remorse gives very little pain if regarded merely as an instrument of torture, so the benevolent man will find correspondingly little delight in his virtue if he is benevolent for the pleasure of getting his own approval.

In short, while all pleasure arises from the satisfaction of desires, it fails to come—from the moral desires at least—if pleasure is their conscious or unconscious object. The satisfaction is not due to pleasure, but pleasure to the satisfaction. Satisfaction and dissatisfaction are due to the rational approval that follows the criticism of the particular desires by the idea which the agent has explicitly or implicitly set himself as the end of his actions. This supplies the only critical pleasure or delight. Whether his idea be right or not, every man in a civilised or uncivilised community has moral satisfaction always, and only, when the exercise of his particular desires does not contradict the general desire to realise it.

It follows that the improvement of character is not properly represented as due to the action of the environment, but, ultimately, to the exercise of this general or 'superintending' desire. The distinction between a moral or responsible and a non-moral or irresponsible being is that the one is able to criticise his means of action,—the desires constituting his character,—while the other is not. It is the same thing to say that the moral being is he who is not limited to accepting his desires as he finds them. It does not follow either that one's criticism is correct or that it is able to subordinate the refractory desires without much trouble. But the criticism is no more haphazard than the criticism of anything else, and the reformation of the practical character by its means is no more contingent than the improvement of the intellectual character by similar means. Nor, of course, can the moral character become perfect by wishing, or by a languid disapproval from the general desire for completeness, any more than the intellectual character.

If, however, the student has not to wait till the desire to complete his intellectual character strikes him, now at one time, now at another, why should the reformation or degradation of moral character be contingent on the action of circumstances? We are as free to act as to think, and neither in acting nor in thinking are we limited to courses determined by the ideas that happen to strike us, as if the action of either could be explained by the association of ideas,—by cause and effect, instead of by end and means.

It is impossible in this paper to amplify these remarks or take up objections. I offer them simply to explain how only the action of the environment on character can be supposed to improve it. We have seen that, so long as punishment is merely resented, it cannot effect its purpose, and that it must always be resented till it is justified. There is no difficulty in seeing that it is necessary for society at large; but how is the individual to recognise its necessity for him? Only if his interests can be harmonised with the interests of others. But how is he to admit this? Only if his character, as he actually finds it, can be determined by the desire for a character equal to this harmony. In short, the culprit must be shown to have chosen, and acquired the right to, punishment as part of the course which he adopted, in preference to the course that had not punishment as an element in it. If it be objected that his character was bound to be what it was at the time of choosing, and that he should, therefore, still have resentment, I reply that he may know that his choice was due to either of two things. In the first place, as in yielding to a habitual vice, he may not have determined, or may not have been able to determine, his character in face of the temptation, by the general desire which aims at eliminating the causes of pain within the character. In the second place, the anticipation of the pain made when alternative courses of action were compared may not have adequately represented the reality. In either case the culprit sees the necessity for a change of character,—not for an alien good, but for his own; and not by an instrument of force, but by an instrument adopted by himself. If the function of punishment is to increase the stability of society, by improving the characters of its members, the resentment must fall, not on the punishment, but on its cause,—the imperfection of the character. This is possible only if a man finds the modifying principle to be not in an external medium, making him a means to its own good, but in a desire for completeness, which canvasses the particular

desires constituting the character, and, by appropriate means, eliminates those that are inimical to the rest and to the conditions of life. This is also the direct antithesis of the doctrine which supposes that men dread to be immoral for fear of the pangs of remorse, as if conscience were something they had unfortunately to account with, like the police. For we have seen that, unless the pain is itself desirable, he would be a very easily deluded man who did not, by defying, very shortly overcome it.

While, then, the end and means of moral progress given by the Ethic of Evolution are perfectly true—as almost any other end and means ever proposed are—it does not seem to me that they express the essence of the matter. If it is wrong to represent the laws of morality as if men existed in any sort of medium, it is, at least, as fatal to represent the individual as the child of the medium. You cannot simply close his mouth if he asks, 'Why should I be moral?' and it is surely not a satisfactory answer to say, 'I'll make you,' as if people who ask the question are to be satisfied with being told that they are yet in their long clothes.

IV.—THE ANTINOMY OF THOUGHT.

By Alexander F. Shand.

§ 1. *Statement of the Problem.* My object in the following paper is to investigate an antinomy which infects all our thought of reality that is not intuitive. We shall find it hard to surrender either the thesis or antithesis which together constitute it; and any synthesis that would harmonise its conflicting assertions seems impossible. I shall try to show (1) what the antinomy is; (2) what the solution of it must be; and (3) how, and why, it vexes our thought. The final answer to the first question will only be reached after we have seen the various forms which the antinomy assumes in response to our attempted solutions of it. Our answer to the second question will be the outcome of this series of attempted solutions, each of which, through its failure, will bring us nearer to the true solution. The third answer will be involved in the second; for as the antinomy does not belong to the reality affirmed, but to our thought, so an adequate solution of it will be an exposure of the different errors through which it infects our thought. I shall investigate it in a common categorical judgment, and leave the reader to apply this to other cases, as well as to types of thought that are not categorical.

§ 2. *First Statement of the Antinomy.* Let us start from the judgment, that some person A whom you do not now perceive is in a place B which is also beyond your present perception. When the judgment occurs, the image or representation of A is found localised in the image or representation of B. We have first to realise that the judgment transcends these images. For, when they are vivid, when you see with the mind's eye this person in the place where you suppose him to be, and are occupied with the images, and do not analyse your thought, it seems that the images themselves are the objects of your judgment, and that which it is concerned about. You look at them as more than images, as belonging to an external order to which you yourself belong, just as you regard the perceived world as subsisting apart from your perception. But this unthinking outlook involves more than is apparent: for to think of these images as belonging to an external order, you must

judge them to subsist when you are not conscious of them; and this would be hardly maintained on reflection. If you did maintain it, you would still be carried beyond the images. For, to think that anything is when you are not conscious of it, you must represent it in your consciousness, and (what is implied) *know this to be a representation*—which is to judge that there really is an object corresponding with it. This judgment is of the utmost importance, though almost always overlooked; and we must realise that it can never be reduced to images and their relations. We can make in consciousness one image similar to another, and regard one as the representation of the other. But in this way we cannot possibly construct the judgment that the one image represents what we are *not* conscious of. This is only possible, where there is a judgment irreducible to any group of images and their relations, which does not even regard them as its objects, but which judges other objects of which the individual judging is *not* conscious. It then becomes possible, through this presupposed judgment, to affirm that a group of images in consciousness represents objects affirmed to be without.

Thus you have failed, and must always fail, to confine the judgment 'A is in B' to images in consciousness. It is, indeed, only the images of A and B of which you are conscious; but it is not the image of A which you affirm to be in the image of B, but A and B themselves which you affirm to be so related; and of them you are not conscious. It is of no matter here whether this judgment is true or false; we are only concerned to analyse what it undoubtedly judges.

I now pass to the statement of the antithesis. In judging that A is in B, you are conscious of the judgment,—not of any bare judgment, but just this concrete judgment that A is in B. Now abstract A and B, and the judgment becomes a bare 'You judge' without there being anything that you judge. Substitute C and D, or E and F in place of A and B, and you have a different judgment. You must, therefore, be conscious of A and B, the objects of the judgment, otherwise you would be conscious of a bare judgment, or a different judgment, but not this concrete judgment that A is in B. But you are not conscious of A and B: you have affirmed, and must continue to affirm, that any A and B in your consciousness is a mere representation, which this judgment is not affirming, which it is not limited by, but which its very essence is to transcend.

Thus you must judge, on the one side, that you are not conscious of A and B, on the other, that you are,—that A and B are in your judgment, and yet also outside of it.

§ 3. *First attempted solution of the Antinomy.* The judgment 'A is in B' is true or false. Suppose it false, in the first instance, and so completely false that no objects A and B exist to correspond with *a* and *b*, their images in consciousness. None the less the judgment affirmed them—affirmed A in a certain relation to B. You must then distinguish the affirmed A and the affirmed B from A and B, the objects. The first are in the judgment, and contained therefore in a reality in consciousness: the last in this case have no reality; and you cannot confuse what is and is not. And if the judgment 'A is in B' is true, we must still maintain the distinction. For the affirmed A and the affirmed B are in the judgment affirming them, but A and B the objects we suppose are real outside of it. Thus we are no longer bound to judge that the subject judging is conscious of A and B, nor that A and B in the same sense are both in and outside of the judgment. For the affirmed A and the affirmed B are alone in the judgment; but if A and B the objects are real, they are real outside of it.

§ 4. *Second form of Antinomy.* The failure of the first solution may be shortly expressed if we symbolise the affirmed A and the affirmed B by α and β. For if all of which the subject is conscious is the α and β in the judgment, then this is all the subject judges in the judgment; whereas if the subject judges about A and B, and not about α and β, then it is A and B of which the subject is conscious. And the reason is, that if it is A and B I judge, then it is A and B that gives the judgment its concrete character, or makes it this judgment and not another—a judgment concerned about A and B, and not about α and β. Hence it follows that it is precisely A and B of which I am conscious, inasmuch as I am conscious of *this* judgment; whereas if it is α and β of which I am conscious in the judgment then it is α and β which give the judgment its concrete character, and therefore α and β which are judged. We will not accept this alternative, and cannot escape from it: we are obliged to reassert that the subject judges an A and B of which it is not conscious and not an α and β of which it is.

§ 5. *The solution of the Antinomy must be through some modification of the Antithesis.* The thesis is that I am unconscious of A and B, though I judge them. This I have not tried to modify, for it is the very judgment we set out to interpret; and if we denied its possibility, this would involve the denial of all other judgments that unite with it

in judging that of which the subject judging is not conscious. Thus would disappear in theory our practical life which is based on such judgments. We sought then to modify the antithesis, that in thinking about A and B we unite them to our thought and consciousness; for its denial would destroy no type of judgment, and so little is it bound up with our practical life that it is in flagrant opposition to its presuppositions, and the practical man would think it absurd. In this course we shall continue.

§ 6. *General statement of the Antinomy.* The subject is bound to judge both that it is confined to its thought and consciousness, and that it transcends them. Yet this obligation cannot be fulfilled. The subject cannot unite in one judgment these contradictory qualities, but falls a helpless prey to each in successive states of its own existence. The contradiction does not merely arise, as the German idealists hold, from judging that anything is beyond thought in general, but whenever the individual judges that anything is beyond his thought at the moment of his thinking. For when he judges, then what he judges his thought embraces.

§ 7. *The sensuous meaning of the words, 'transcending,' 'outside of,' and the like.* Now, since in the judgment 'A is in B' I am judging, not that the thoughts a and β, and a and b the representations, are related in a certain way, but that A and B themselves are, we have to ask from the point of view of the antithesis how this judgment is possible, seeing that to make it possible I must go quite outside my thought and consciousness. But, were I able to do this, would it help me? Could I travel to the place where I think that A and B are, *if* they are, I should get an intuition of them. I could not then affirm in presence of this intuition that they are, though I am *unconscious* of them; but if they are not, but others instead of them, then I could not affirm that they are in presence of this opposite intuition. Thus, could the subject through its function of judging reach to where it thinks A and B are, this judgment would still be impossible to it. Only if consciousness is limited, but judgment not limited by consciousness, is it possible for me to judge that of which I am not conscious.

§ 8. *Judgment need not be in 'contact' with its object, nor 'contain' it.* If we now turn to criticise the thinking which has led to this conclusion, and the question which started it, we shall find that it has been dominated throughout by

metaphor, by the spatial meaning of these words, 'transcending,' 'going outside of,' and the like. We supposed that, if judgment could judge anything beyond the consciousness of its subject, it must literally travel to that distant object, till it came in contact with it. This was our implied reason for seeking to send judgment beyond consciousness; for since the latter was not in touch with its object, it seemed obvious the former must be. We did not stop to ask ourselves, how a thinking subject could be in contact with an extended object. It did not occur to us that even the extended forms of which we are conscious in perception, we, not being one of them, are not in contact with in the same sense as they are with one another; that our contact with them, when we strip the word of metaphor, means simply that we are conscious of them. Why then should we seek for judgment a contact with its object which, likewise from its very nature, is impossible? Why did we not conclude, that as in the one case we are conscious of the object without *physical* contact, so in the other we judge the object without such contact?

There is then no difficulty in the way of judgment because we as subjects are incapable of *motion* and cannot go outside of consciousness to *touch* the object. The only sense in which we go outside it or transcend it, and that which leads to our use of these metaphorical terms, is, simply, that we judge that of which we are not conscious. But language is so penetrated by metaphor, that the dismissal of an image from one set of words leads often to its insertion in others. So it occurs to us, that if our thought cannot transcend consciousness, we must be confined to it. But just in the sense that we, as thinkers, cannot get to the object beyond consciousness, we cannot get to the object in it, and in the same sense that we can get to the object in consciousness, we may get to the object beyond it. Again, we say that, if we do not go out of consciousness to reach the object we judge without it, then, for the possibility of the judgment, there must be some emission from the object to consciousness, bringing its effect or representation there. Now, what is brought into the visual field we possess as an intuition, and if this intuition is all we know, it destroys the possibility of the judgment which judges without intuition of its object: but if we know more, if we know the intuition as an *effect* or *representation*, then this knowledge is still concerned with something not in consciousness, and would be impossible without this reference. But we repeat, and take denial as a palpable self-

contradiction, that, if thought is separated from reality, the one can have no dealings with the other. For to think what is separate from our thought, we must unite it to our thought, and contradict ourselves. And the clear sensuous meaning of the words convinces us. We make no criticism of the words, nor suspect that they present us with a wrong relation of thought and reality, because the unextended thought is transformed to an extended object. But, when we rid ourselves of the metaphor, it is by no means clear that we cannot think a reality separate from our thought of it: for it may not exist, and cannot then be brought into contact with thought; and it may exist miles away, and yet be thought of.

To answer this objection, we make use of the metaphors of 'inside' and 'outside'. 'In thinking reality the reality is rather inside thought than in contact with it, and the contradiction lies in thinking it outside: it is in the sphere of thought, and not in the sphere of an external reality.' If we ask why it must be inside thought, why thought must be confined to its own nature and content, our answer falls back on the old metaphor of contact: 'only within its own sphere can thought be in contact with reality'.

§ 9. *The metaphor of 'contact' applied to the consciousness of space.* Under the influence of this metaphor it not only seems impossible to us that thought can affirm an object not in contact with the thought, but it suggests a corresponding difficulty with regard to consciousness. I do not mean to make any reference to the literal contact of the object with the nervous system, but to that further and metaphorical contact of it with thought and consciousness. Now I am conscious of a complex of coloured forms in space. But space, we think, has three magnitudes, and one of these magnitudes runs away from me. I cannot obviously be in contact with this distance. I can only be in contact with a surface. Through my contact with this surface I become conscious of it; but distance I am not in contact with, and cannot, therefore, be conscious of. This surface is a magnitude. Am I then the same magnitude as it, or less, or greater? If less, then a part of this surface I cannot be in contact with, and this part I must, in consistency, exclude from consciousness. Of that surface only which is the same magnitude as my subject, or less than it, can I be conscious. But as I am already a magnitude, and this is my very nature, why seek, through my contact with another magnitude, to explain how I come to possess that which I

possess already, and which if I did not possess, I could not have that contact which is supposed to give it me?

But let us follow out the metaphor in another direction. I am not conscious of distance; I only infer it. But I cannot infer it, for I am not in contact with it. My judgment cannot travel through space to the distant object, and if it could, it would destroy the thought of distance. But let these difficulties pass, and suppose that we do infer, and can only infer, distance: let us compare this inferential knowledge of space with that which we have by means of consciousness. Now I am conscious of a variously coloured surface, and I cannot be conscious of the different forms on it as lying at different distances from me, because I am only conscious of a surface; and therefore all these forms I am conscious of as lying on a surface, and not as lying some in front and some behind the others. This is what my perception is, according to the metaphor of contact; and now let us see what the inference is. I judge that these very coloured forms, which I know by consciousness to lie together on a surface, do not lie together on a surface, but are at different distances from me. Thus I contradict the intuitive knowledge I have of them, which no knowledge can surpass in certainty, by a mediate or inferred knowledge. Either then I am not conscious of these forms as definitely on a surface, or, if I am, I cannot affirm them to be what I am certainly conscious they are not.

§ 10. *The Antinomy need not base itself on the metaphors 'in' and 'out,' and 'contact'.* There is a meaning not sensuous in which we may use these words. We may mean that A and B are in thought, and in union with it, as constituents of its judgment. Then the thesis urges a threefold objection. These supposed constituents are either *a* and *b* the images, or the thoughts α and β, or a commingling of both; but neither one, nor the other, nor both, am I affirming. I am affirming A and B the objects, which are not a present intuition of mine, nor my thought about it, nor my thought and intuition combined—a whole which is altogether in consciousness. And it is certain too that if I put or find these thoughts and images in a certain relation, they are in that relation; but what is not certain is that an A and B of which I have no intuition, and which may not even exist, are in that relation in which I affirm them to be.

§ 11. *Second attempted solution of the Antinomy.* By our criticism of metaphors we have only repeated and rein-

forced the one-sided argument of the thesis, and exposed the sensuous grounds on which the antithesis is apt to rest, but it has other supports. We have shown that the thesis need not be modified merely because the judgment cannot literally transcend consciousness, and is separated from its object;—that we might accept the thesis as true perhaps but for the antithesis. Has this advanced our solution? In this important respect: according to the thesis I am unconscious of A and B, and A and B are not in the judgment, though I am conscious of judging that A is in B. This act of judging does not require me to be in contact with A and B. It does not presuppose the actual reality of A and B, which it must if there is to be contact. On the contrary it only judges A and B to have reality. The sole function of the subject in this judgment lies in affirming A, in affirming B, and in affirming a certain relation between them. This one function *is* the judgment. This one function then is all that the subject is conscious of in being conscious of the judgment. That is to say, the subject is conscious of affirming A, but not of A; is conscious of affirming B, but not of B; is conscious of affirming-a-certain-relation-between-them, but not of this relation itself. For, if it were conscious of A and B in affirming them, it would have to confer on them reality, or presuppose it as given. Again, because the subject is not conscious of A and B in the judgment, it does not follow that it is only conscious of the bare act of judging; for it is conscious of this very concrete act of judging-that-A-and-B-are-in-a-certain-relation. From supposing separate (what are inseparable), the abstract act of judging and what the subject judges, we falsely concluded that the subject is conscious of A and B in being conscious of the judgment, whereas it is only conscious of judging-A-and-B. Judging that is not intuition is only judging, and does not amount to any the least act of creation, or 'putting forth' of reality, which, as result of its act, would become something separate. A and B are only *thought* to be: whether they *are*, is a different matter not even affected by thinking of them. And, as thought to be, they are in indissoluble unity with the act of thinking them, and nothing separate or independent. Lastly we must make no mistake on this point: for the very reason that no A and B are put forth by the judgment, it is possible to be unconscious of A and B, though judging them. For if A and B were a real result, or a given datum, in the judgment, I could not but be conscious of them in being conscious of the judgment. Thus upon this subtle, but vitally important, distinction depends our solution of the antinomy.

§ 12. *The main source of the Antinomy is found in Language.* Our error has been a confusion, and language is at the bottom of it. For the terms of its proposition are easily separable, stand there as so many independent units, casually connected. Without being aware of any change of standpoint, we suppose the same to be true of judgment. The proposition, from its sensuous nature, attracts our attention, but it is hard to make the judgment an object of thought. So we transfer the qualities of one to the other. Thus thinking by metaphor we lean on the proposition, as if its linguistic expression *was* the judgment. Thus we use metaphors as lights to see into the dark recesses of thought, but which cast there their own images: and we are turned aside from the truth by countless false questions and false inferences.

We take A and B out of the proposition without difficulty, holding up to consciousness two complete and separable realities, behind which, in no very obvious connexion, stands the act of judgment—another reality also complete in itself; or we confuse the images *a* and *b* with the A and B judged, which, like the images, are supposed actual, separable from one another and from the act of judgment. This fundamental error rises afresh in a variety of forms, bringing back upon us the antinomy; and it will continue to vex us as long as thought is weak, and leans upon sense for clearness.

§ 13. *Third form of the Antinomy, and its solution.* If the judgment 'A is in B' is true, a real A and B corresponds with the judgment. There must then be an asserted A and B in the judgment for the real A and B to correspond with, and α and β must stand in the same relation to one another as A and B. Thus we are forced into the old error of breaking up the unity of the judgment and finding a complete object α and β within the judgment, with the result that it must be α and β that is judged, and not A and B (§ 4). The way out of this metaphysical difficulty can only be hinted at here. We take the transcendent judgment too abstractedly. Besides the act of judging A and B, there is another act combined with it, very different from it. This is an act of consciousness which has the images *a* and *b* for its objects. Now, in the mere transcendent act of judging A and B, there is nothing, perhaps, for the real A and B to correspond with. But the whole act is something more than this transcendent act; and it judges that the correspondence lies be-

tween the images *a* and *b* in consciousness, and the A and B that are transcendentally judged.

§ 14. *Ambiguous meaning of 'what is judged' and 'object'.* We speak of 'judgment and its object,' or 'judging and what is judged'. 'What is judged,' the object, means either the reality outside the judgment, or what is judged, whether or not there happen to be this reality. Now, though there must always be an object to a judgment, in the sense that judgment cannot be arrested at the bare act of judging but must be judging-about-something, there needs not be an object in the other sense of a reality that corresponds to our representation of it.

§ 15. *Fourth form of the Antinomy, and its solution.* The bare act of judging is not then sufficient to constitute a judgment; there must be a something judged to complete it and give it concrete character. Through this distinction the antinomy returns in a choice of alternatives, neither of which can be accepted. For, either we affirm that the something judged is outside the judgment, and then this external reality cannot be contained in it; or we affirm that the something judged is contained in it, and then it cannot be external. But on neither alternative can we judge that what we judge is external: in the first case, because the object is external, and cannot be the something judged which belongs to the judgment as the completion and concretion of its own act; in the second case, because the object is this inalienable property of the judgment, and is not external. We repeat our former solution, that neither A and B, nor objects in any other sense, are contained in the judgment. Nor, as we struggle to believe, does the judgment, in affirming-an-external-A-and-B, fall into self-contradiction; for this would only occur if the reality of what it affirms were given to it, or created by it. But this is no answer to the objection, that, if 'what is judged' is contained in the judgment, it cannot be truly judged to be external. We may be deceived by the metaphorical meaning of the word 'content'. Judgment is no hollow cavity, filled in its concrete existence with a content, no particle of which is anywhere but within it. A and B are rather *of* the judgment, and *belonging* to it, than contained in it. But the difficulty is that A and B cannot be external, for A and B are required to complete the bare act of judging, and to give it concrete character. We repeat there is no contradiction in the judgment, till A and B are taken out of their *fluid* and *continuous* state in it, and

hardened into realities, till the thinking-of-them is transformed into existence. The thinking or affirming of them is truly a judgment; but as existing, if they exist, they are wholly external to the judgment.

§ 16. *Fifth form of the Antinomy, and its solution.* If the A and B belonging to the judgment are no realities, but only the thinking-of-them, then it is these thoughts that the judgment is concerned about, and even if there are external realities to correspond, they are not what the judgment judges. Our solution is that this thinking-of-them *is* the judgment, and this is not of course external, though it is a thinking-of-*them*-as-external.

§ 17. *Sixth form of the Antinomy, and its consequence.* The antinomy reaches a climax in the form: 'them,' as a constituent of the judgment, cannot be external, cannot be, what you affirm it, an external reality. Let us suppose this contention valid, and push it to its consequences. It follows that A and B as constituents of the judgment are internal; and, as they are in the judgment, they are no realities, but only the thinking-of-them. This is all that the judgment contains. But this thinking of them is itself a judgment, and with regard to it the same difficulty recurs as to the meaning of 'them,' which must receive the same answer, that 'them' is no reality, but only the thinking-of-it. What the judgment contains is then the thinking-of-the-thinking-of-it. And we are forced a step further towards absurdity. We must deal with 'it' as we dealt with 'them'; 'it' is no reality, but only the thinking-of-it, and so on for ever. All that judgment contains is the thinking-of-the-thinking-of-the-thinking. . . . It can never become articulate, and struggles in vain to reach beyond itself. It cannot judge external reality, and it judges no other: it judges nothing at all. It seems to judge something contained in itself, which is not reality, but only a bare and meaningless 'judging' over again. Even reduced to this impossible abstraction, it cannot avoid self-contradiction. It is bound to judge its objectless object, its bare act of judging, as real in some way, as real in its thought, and so it is led on again in a course to which there is no end.

But this absurd consequence is not a refutation of the antinomy. As once before we were led into a defence of the thesis, so here we have undertaken to expose the self-contradiction of the antithesis. But it is brought to contradiction because it accepts, and cannot help accepting, the thesis; and this is the very nature of the antinomy, that either side followed

to its consequences refutes itself, because it is implicated with the other side. The antinomy, however, is not answerable for such consequences. Its true position is scepticism; its function is destruction; it reiterates a persistent contradiction. And we have failed to resolve this contradiction, to explain how 'them' as a constituent of the judgment can be judged to be external, and how the judgment can dispense with this constituent without becoming a bare objectless act.

§ 18. *The source of this form of the Antinomy* lies in the distinction of 'judging' from 'what is judged'. Once we work on this distinction, 'what is judged' inevitably assumes the form of reality. We deny that it is a fixed or completed reality, only to affirm it as fluid or 'becoming'. We confuse a judgment which contains no kind of reality save the reality of its own act, with one that contains some image of which we are conscious. And our solution has failed because we are bound by a distinction which prevents a consistent employment of it. When we forget the distinction, then the solution applies, but the antinomy returns when we recall it.

§ 19. *The nature of the distinction of 'judging' from 'what is judged'.* We have seen that the phrase 'what is judged' is ambiguous, and I here put aside one meaning of it. I am not going to consider the distinction of judging from what is judged—the reality outside the judgment, but that perplexing distinction within the judgment. Now, so far as it holds at all, it only holds between different stages in the development of a thought, and not between any statical elements in a thought. Asking the meaning of a judgment, we may seek to make our vague conception of it clearer by asking 'what it judges'. And we think it shows some advance to be sure of this point only, that judgment must judge something. Judging and a something judged are thus set over against one another as fixed elements of the judgment, whereas they are only successive stages of it. At first comes the bare act, and then something more definite. As when we look at a distant object, or one lost in any mist or obscurity, and ask: What is it? feeling sure that it is no mere object in general but an individual object; so with a like expectation we question the judgment, and answer that there must be a something judged. We are further led to regard this difference as a constant one within the judgment, by a habit of language. For language places an 'I am judging' before what I judge. In the present case I am judging that A is in B. It seems, on the one hand, there

is an act or operation, on the other an object, as the Scottish school express it. We have here a redundancy of phrase, which has made us suppose a real elemental difference. We need not prefix an 'I am judging'. 'A is in B' is a complete expression of the judgment, save that it does not refer the judgment to *me* as its subject. 'A is in B,' then, is my act of judging; it is also 'what is judged'. This act is no mere act of judging, but the very concrete act that A is in B; and 'A is in B' is what is judged. Thus if we rightly reflect on a judgment we shall not find within it any such distinction of 'judging' from 'what is judged'; though there is a difference between the first vague thought of the act and the truer and more definite one into which it passes, when the strange out-going character of the act is recognised.

§ 20. *The distinction of Thought from Reality.* In a similar fashion, we are apt to regard the relation of Thought to Reality—the universal to the singular. First comes to the thinker the indefinite and abstract, then, as progress is made, the more concrete and definite; and these moments of thought are looked upon as necessary elements of the 'concrete universal'. Thought thinks reality, and therefore contains it and characterises it and makes it thought; and thought is reality, for thought is nothing apart from the reality to which it is united. Many are apt to prize this result as indicating an advanced stage of philosophy which has solved its hardest problem; for in this act they suppose they find the profound gulf between Thought and Reality bridged by the wide-stretching span of thought. We, on the other hand, have struggled to force reality out of thought and the judgment, because any theory which cannot do this inevitably fails to account for those fundamental types of judgment and thought which, though they think reality, do not judge this reality to be within their thought and the consciousness of their subject, but outside of both.

§ 21. *Judgment, in what sense a simple unity.* Since there is, within the judgment, no constant difference of 'judging' from 'what is judged' it follows that 'judging' and 'what is judged' are not diverse elements from whose union the judgment results. 'What is judged'—'A is in B'—is my very act of judging. This my act of judging does not become concrete from union with an element different from itself, but is itself concrete. And my judgment is a simple act in this respect, that it excludes all actual relation to its object,

and to containing its object as a constituent. It is true that consciousness contains its object; but it is not true of any judgment so far as it is transcendent, that is, so far as it transcends what the subject judging is conscious of. For, if A and B are constituents of my judgment, A and B are with it in consciousness. If external reality is an idea or 'universal,' the affirmation of it is a self-contradiction; but in affirming external reality I am not affirming an idea, but a reality, to be external. Neither the reality nor the relations I affirm of it are in my thought, nor has my thought any dealings with them, nor is my judgment constituted by their union. It may seem as if, in the judgment 'A is in B,' the relations of difference between A and B are in my thought, not to speak of other relations. But this is not so. There is only the *judging*-of-a-difference: there is no *actual* difference. Whatever judgment we examine, and however much we abstract from the complexity of its real object, we always find this judging-of-an-object. We cannot get beneath this act; we cannot resolve it into components. Though we must use two such words to express it, as 'judging' and 'object', which for ever suggest a fundamental difference in the judgment, yet judgment is no such complex of elements, for it is itself an element. But in another sense the act of judging is complex. When we do not regard it in the abstract, but in its real occurrence, we find that its act is a complex of different acts of judging, and that it also combines with acts of consciousness, desire, and will. But abstract from this complexity, isolate an act, look how it is concerned about an object, then in this concernment it is altogether simple.

§ 22. *Solution of the sixth form of the Antinomy.* I justify the theory of the simplicity of judgment as judgment on this one ground, that it alone adequately solves the antinomy. Whereas, if judgment be regarded as complex *in reference to its object*, no solution of the antinomy is possible. For, on this view, there is a factual relation in the judgment between the act and its concrete object, and through this concrete object entering the judgment as a constituent, the judgment alone itself becomes concrete; thus it is impossible to affirm without contradiction that the object is anywhere but where the judgment is. But inasmuch as the act is simple in reference to its object, and A and B are not in the judgment as constituents, I am not conscious of A and B, though I am conscious of judging-them; and inasmuch as my act is concrete, because it judges these objects

A and B, I am not conscious of an abstract and objectless act.

§ 23. *Other forms of the Antinomy are easy of solution.* 'A is in B' is a judgment; a judgment is an internal reality; how then can it be two external realities in relation? The judgment is an internal reality, though it is judging-two-external-realities. Again, since the act of judging contains no reality but the reality of its act, it has nothing left to judge but this act. This form of the antinomy is based on the metaphor of contact. Now we have already seen that this judgment is not confined to judging the reality of its act, nor to anything in the consciousness of its subject, which would destroy its possibility. How, indeed, it comes to pass that I can judge a reality other than the reality of my judgment; how, further, it comes to pass that I am not even confined to any reality of which I am conscious;—are questions that we seek in vain to answer. We do best to examine the questions; and I have already sought to show that the suspicion they involve arises from our uncritical use of the terms, 'confined,' 'transcending,' and the like, with the consequent confusion of their pure meanings, as expressing functions of judgment, with the literal and sensuous meanings of the words. But we shall not attempt a positive answer to these questions, if we know what we are about. For how can we construct the knowledge which transcends our judgment and consciousness out of elements which do not presuppose the very knowledge to be constructed? In showing how it is possible for us to think a world beyond our thought, we must always assume there is this world, before setting out to explain how thought can reach it. We must sweep away metaphors and the barren questions in which they involve us, and recognise once for all that judgment is one reality that judges another reality.

§ 24. *The various sources of the Antinomy, and their fundamental identity.* At first, language betrayed us into setting up as complete realities the A and B which, contained in the proposition, seemed also contained in the judgment. And, by discovering the true solution that this judgment neither makes nor contains the reality which it judges, we could not help falling back into the antinomy again and again. For the fatal distinction of judgment and object, 'judging' and 'what is judged,' as a distinction somehow within the judgment, bound us logically to it. Lastly, we

had to rid ourselves of the error, implied in this distinction, that judgment, as judgment, is a complex unity.

And the source of these various errors is the same in kind. Thought strives to free itself from sense, and to think its own nature without contradictions. But metaphor, and the secret habits of language, are graven upon thought, and have there written vain questions, and false doctrines. Thought asks how it can pass outside of itself, and the metaphors of 'outside' and 'contact' destroy its hopes. In despair it seeks to confine itself to consciousness, to its immediate knowledge. What then is the meaning of its doubts: why does it question, suppose, take disjunctive and problematic forms, when all is certain there, and contained in intuition? Or, it falls a prey to the sensuous symbolism of itself in language. It discovers in the proposition the subject, predicate and copula. It analyses judgment into diverse elements. It succumbs to the habit of language, placing a redundant act of judging before the judgment: it supposes a fundamental difference. Thus the fictitious clearness which sense holds out, and the ancient associations which bind thought to it, deceive thought as to its own nature. And the fundamental error which runs through all the other errors is this:—the confusion of the judgment with the consciousness or intuition of reality.

V.—MENTAL TESTS AND MEASUREMENTS.

By Prof. J. McK. Cattell.

Psychology cannot attain the certainty and exactness of the physical sciences, unless it rests on a foundation of experiment and measurement. A step in this direction could be made by applying a series of mental tests and measurements to a large number of individuals. The results would be of considerable scientific value in discovering the constancy of mental processes, their interdependence, and their variation under different circumstances. Individuals, besides, would find their tests interesting, and, perhaps, useful in regard to training, mode of life or indication of disease. The scientific and practical value of such tests would be much increased should a uniform system be adopted, so that determinations made at different times and places could be compared and combined. With a view to obtaining agreement among those interested, I venture to suggest the following series of tests and measurements, together with methods of making them.[1]

The first series of ten tests is made in the Psychological Laboratory of the University of Pennsylvania on all who present themselves, and the complete series on students of Experimental Psychology. The results will be published when sufficient data have been collected. Meanwhile, I should be glad to have the tests, and the methods of making them, thoroughly discussed.

The following ten tests are proposed:

I. Dynamometer Pressure.
II. Rate of Movement.
III. Sensation-areas.
IV. Pressure causing Pain.
V. Least noticeable difference in Weight.
VI. Reaction-time for Sound.
VII. Time for naming Colours.
VIII. Bi-section of a 50 cm. line.
IX. Judgment of 10 seconds time.
X. Number of Letters remembered on once Hearing.

[1] Mr. Francis Galton, in his Anthropometric Laboratory at South Kensington Museum, already uses some of these tests, and I hope the series here suggested will meet with his approval. It is convenient to follow Mr. Galton in combining tests of body, such as weight, size, colour of eyes, &c., with psychophysical and mental determinations, but these latter alone are the subject of the present discussion. The name (or initials) of the experimentee should be recorded, the nationality (including that of the parents), and the age, sex, occupation, and state of health. [See Remark (*a*) by Mr. Galton below, p. 380.—Ed.]

It will be noticed that the series begins with determinations rather bodily than mental, and proceeds through psychophysical to more purely mental measurements.[1]

The tests may be readily made on inexperienced persons, the time required for the series being about an hour. The laboratory should be conveniently arranged and quiet, and no spectators should be present while the experiments are being made. The amount of instruction the experimentee should receive, and the number of trials he should be given, are matters which ought to be settled in order to secure uniformity of result. The amount of instruction depends on the experimenter and experimentee, and cannot, unfortunately, be exactly defined. It can only be said that the experimentee must understand clearly what he has to do. A large and uniform number of trials would, of course, be the most satisfactory, the average, average variation, maximum and minimum being recorded. Time is, however, a matter of great importance if many persons are to be tested. The arrangement most economical of time would be to test thoroughly a small number of persons, and a large number in a more rough-and-ready fashion. The number of trials I allow in each test is given below, as also whether I consider the average or 'best' trial the most satisfactory for comparison.

Let us now consider the tests in order.

I. *Dynamometer Pressure.* The greatest possible squeeze of the hand may be thought by many to be a purely physiological quantity. It is, however, impossible to separate bodily from mental energy. The 'sense of effort' and the effects of volition on the body are among the questions most discussed in psychology and even in metaphysics. Interesting experiments may be made on the relation between volitional control or emotional excitement and dynamometer pressure. Other determinations of bodily power could be made (in the second series I have included the 'archer's pull' and pressure of the thumb and forefinger), but the squeeze of the hand seems the most convenient. It may be readily made, cannot prove injurious, is dependent on mental conditions, and allows comparison of right- and left-handed power. The experimentee should be shown how to hold the dynamometer in order to obtain the maximum pressure. I allow two trials with each hand (the order being right, left, right, left), and record the maximum pressure of each hand.

II. *Rate of Movement.* Such a determination seems to be of considerable interest, especially in connexion with the preceding.

[1] Sharpness of sight (including colour-vision) and hearing might, perhaps, be included in the list. I have omitted them because it requires considerable time to discover the amount and nature of the defect (which is usually bodily, not mental), and because abundant statistics have been published, and are being collected by oculists and aurists. [See Remark (*b*) below, p. 380.]

Indeed, its physiological importance is such as to make it surprising that careful measurements have not hitherto been made. The rate of movement has the same psychological bearings as the force of movement. Notice, in addition to the subjects already mentioned, the connexion between force and rate of movement on the one hand and the 'four temperaments' on the other. I am now making experiments to determine the rate of different movements. As a general test, I suggest the quickest possible movement of the right hand and arm from rest through 50 cm. A piece of apparatus for this purpose can be obtained from Clay & Torbensen, Philadelphia. An electric current is closed by the first movement of the hand, and broken when the movement through 50 cm. has been completed. I measure the time the current has been closed with the Hipp chronoscope, but it may be done by any chronographic method. The Hipp chronoscope is to be obtained from Peyer & Favarger, Neuchâtel. It is a very convenient apparatus, but care must be taken in regulating and controlling it (see MIND No. 42).[1]

III. *Sensation-areas.* The distance on the skin by which two points must be separated in order that they may be felt as two is a constant, interesting both to the physiologist and psychologist. Its variation in different parts of the body (from 1 to 68 mm.) was a most important discovery. What the individual variation may be, and what inferences may be drawn from it, cannot be foreseen; but anything which may throw light on the development of the idea of space deserves careful study. Only one part of the body can be tested in a series such as the present. I suggest the back of the closed right hand, between the tendons of the first and second fingers, and in a longitudinal direction. Compasses with rounded wooden or rubber tips should be used, and I suggest that the curvature have a radius of ·5 mm. This experiment requires some care and skill on the part of the experimenter. The points must be touched simultaneously, and not too hard. The experimentee must turn away his head. In order to obtain exact results, a large number of experiments would be necessary, and all the tact of the experimenter will be required to determine, without undue expenditure of time, the distance at which the touches may just be distinguished.

IV. *Pressure causing Pain.* This, like the rate of movement, is a determination not hitherto much considered, and if other more important tests can be devised they might be substituted for these. But the point at which pressure causes pain may be an important constant, and in any case it would be valuable in the diagnosis of nervous diseases and in studying abnormal states of consciousness. The determination of any fixed point or quantity in pleasure or pain is a matter of great interest in theoretical and practical ethics, and I should be glad to include some such test

[1 See Remark (*c*) below, p. 381.]

in the present series. To determine the pressure causing pain, I use an instrument (to be obtained from Clay & Torbensen) which measures the pressure applied by a tip of hard rubber 5 mm. in radius. I am now determining the pressure causing pain in different parts of the body; for the present series I recommend the centre of the forehead. The pressure should be gradually increased, and the maximum read from the indicator after the experiment is complete. As a rule, the point at which the experimentee says the pressure is painful should be recorded, but in some cases it may be necessary to record the point at which signs of pain are shown. I make two trials, and record both.

V. *Least noticeable difference in Weight.* The just noticeable sensation and the least noticeable difference in sensation are psychological constants of great interest. Indeed, the measurement of mental intensity is probably the most important question with which experimental psychology has at present to deal. The just noticeable sensation can only be determined with great pains, if at all: the point usually found being in reality the least noticeable difference for faint stimuli. This latter point is itself so difficult to determine that I have postponed it to the second series. The least noticeable difference in sensation for stimuli of a given intensity can be more readily determined, but it requires some time, and consequently not more than one sense and intensity can be tested in a preliminary series. I follow Mr. Galton in selecting 'sense of effort' or weight. I use small wooden boxes, the standard one weighing 100 gms. and the others 101, 102, up to 110 gms. The standard weight and another (beginning with 105 gms.) being given to the experimentee, he is asked which is the heavier. I allow him about 10 secs. for decision. I record the point at which he is usually right, being careful to note that he is always right with the next heavier weight.

VI. *Reaction-time for Sound.* The time elapsing before a stimulus calls forth a movement should certainly be included in a series of psychophysical tests: the question to be decided is what stimulus should be chosen. I prefer sound; on it the reaction-time seems to be the shortest and most regular, and the apparatus is most easily arranged. I measure the time with a Hipp chronoscope, but various chronographic methods have been used. There is need of a simpler, cheaper and more portable apparatus for measuring short times. Mr. Galton uses an ingenious instrument, in which the time is measured by the motion of a falling rod, and electricity is dispensed with, but this method will not measure times longer than about $\frac{1}{3}$ sec. In measuring the reaction-time, I suggest that three valid reactions be taken, and the minimum recorded. Later, the average and mean variation may be calculated.[1]

VII. *Time for naming Colours.* A reaction is essentially reflex,

[1 See Remark (*d*) below, p. 381.]

and, I think, in addition to it, the time of some process more purely mental should be measured. Several such processes are included in the second series; for the present series I suggest the time needed to see and name a colour. This time may be readily measured for a single colour by means of suitable apparatus (see MIND No. 42), but for general use sufficient accuracy may be attained by allowing the experimentee to name ten colours and taking the average. I paste coloured papers (red, yellow, green and blue) 2 cm. square, 1 cm. apart, vertically on a strip of black pasteboard. This I suddenly uncover and start a chronoscope, which I stop when the ten colours have been named. I allow two trials (the order of colours being different in each) and record the average time per colour in the quickest trial.

VIII. *Bisection of a 50 cm. Line.* The accuracy with which space and time are judged may be readily tested, and with interesting results. I follow Mr. Galton in letting the experimentee divide an ebony rule (3 cm. wide) into two equal parts by means of a movable line, but I recommend 50 cm. in place of 1 ft., as with the latter the error is so small that it is difficult to measure, and the metric system seems preferable. The amount of error in mm. (the distance from the true middle) should be recorded, and whether it is to the right or left. One trial would seem to be sufficient.

IX. *Judgment of 10 sec. Time.* This determination is easily made. I strike on the table with the end of a pencil, and again after 10 seconds, and let the experimentee in turn strike when he judges an equal interval to have elapsed. I allow only one trial and record the time, from which the amount and direction of error can be seen.

X. *Number of Letters repeated on once Hearing.* Memory and attention may be tested by determining how many letters can be repeated on hearing once. I name distinctly and at the rate of two per second six letters, and if the experimentee can repeat these after me I go on to seven, then eight, &c.; if the six are not correctly repeated after three trials (with different letters), I give five, four, &c. The maximum number of letters which can be grasped and remembered is thus determined. Consonants only should be used in order to avoid syllables.

Experimental psychology is likely to take a place in the educational plan of our schools and universities. It teaches accurate observation and correct reasoning in the same way as the other natural sciences, and offers a supply of knowledge interesting and useful to everyone. I am at present preparing a laboratory manual which will include tests of the senses and measurements of mental time, intensity and extensity, but it seems worth while to give here a list of the tests which I look on as the more important in order that attention may be

drawn to them, and co-operation secured in choosing the best series of tests and the most accurate and convenient methods. In the following series, fifty tests are given, but some of them include more than one determination.

Sight.

1. Accommodation (short sight, over-sight, and astigmatism).
2. Drawing Purkinje's figures and the blind-spot.
3. Acuteness of colour vision, including lowest red and highest violet visible.
4. Determination of the field of vision for form and colour.
5. Determination of what the experimentee considers a normal red, yellow, green and blue.
6. Least perceptible light, and least amount of colour distinguished from grey.
7. Least noticeable difference in intensity, determined for stimuli of three degrees of brightness.
8. The time a colour must work on the retina in order to produce a sensation, the maximum sensation and a given degree of fatigue.
9. Nature and duration of after-images.
10. Measurement of amount of contrast.
11. Accuracy with which distance can be judged with one and with two eyes.
12. Test with stereoscope and for struggle of the two fields of vision.
13. Errors of perception, including bisection of line, drawing of square, &c.
14. Colour and arrangement of colours preferred. Shape of figure and of rectangle preferred.

Hearing.

15. Least perceptible sound and least noticeable difference in intensity for sounds of three degrees of loudness.
16. Lowest and highest tone audible, least perceptible difference in pitch for C, C′, C″, and point where intervals and chords (in melody and harmony) are just noticed to be out of tune.
17. Judgment of absolute pitch and of the nature of intervals, chords and dischords.
18. Number and nature of the overtones which can be heard with and without resonators.
19. Accuracy with which direction and distance of sounds can be judged.
20. Accuracy with which a rhythm can be followed and complexity of rhythm can be grasped.
21. Point at which loudness and shrillness of sound become painful. Point at which beats are the most disagreeable.
22. Sound of nature most agreeable. Musical tone, chord, instrument and composition preferred.

Taste and Smell.

23. Least perceptible amount of cane-sugar, quinine, cooking salt and sulphuric acid, and determination of the parts of the mouth with which they are tasted.
24. Least perceptible amount of camphor and bromine.
25. Tastes and smells found to be peculiarly agreeable and disagreeable.

Touch and Temperature.

26. Least noticeable pressure for different parts of the body.
27. Least noticeable difference in pressure, with weights of 10, 100 and 1000 gms.
28. Measurement of sensation-areas in different parts of the body.
29. Accuracy with which the amount and direction of the motion of a point over the skin can be judged.
30. Least noticeable difference in temperature.
31. Mapping out of heat, cold and pressure spots on the skin.
32. The point at which pressure and heat and cold cause pain.

Sense of Effort and Movement.[1]

33. Least noticeable difference in weight, in lifting weights of 10, 100 and 1000 gms.
34. Force of squeeze of hands, pressure with thumb and fore-finger and pull as archer.
35. Maximum and normal rate of movement.
36. Accuracy with which the force, extent and rate of active and passive movements can be judged.

Mental Time.

37. The time stimuli must work on the ear and eye in order to call forth sensations.
38. The reaction-time for sound, light, pressure and electrical stimulation.
39. The perception-time for colours, objects, letters and words.
40. The time of naming colours, objects, letters and words.
41. The time it takes to remember and to come to a decision.
42. The time of mental association.
43. The effects of attention, practice and fatigue on mental time.

Mental Intensity.

44. Results of different methods used for determining the least noticeable difference in sensation.
45. Mental intensity as a function of mental time.

[1] Organic sensations and sensations of motion, equilibrium and dizziness, should perhaps be included in this series.

Mental Extensity.

46. Number of impressions which can be simultaneously perceived.

47. Number of successive impressions which can be correctly repeated, and number of times a larger number of successive impressions must be heard or seen in order that they may be correctly repeated.

48. The rate at which a simple sensation fades from memory.

49. Accuracy with which intervals of time can be remembered.

50. The correlation of mental time, intensity and extensity.

Remarks by FRANCIS GALTON, F.R.S.

(*a*) One of the most important objects of measurement is hardly if at all alluded to here and should be emphasised. It is to obtain a general knowledge of the capacities of a man by sinking shafts, as it were, at a few critical points. In order to ascertain the best points for the purpose, the sets of measures should be compared with an independent estimate of the man's powers. We thus may learn which of the measures are the most instructive. The sort of estimate I have in view and which I would suggest should benoted [? for private use] is something of this kind,—" mobile, eager, energetic ; well shaped ; successful at games requiring good eye and hand ; sensitive ; good at music and drawing ". Such estimates would be far from worthless when made after only a few minutes' talk ; they ought to be exact when made of students who have been for months and years under observation. I lately saw a considerable collection of such estimates, made by a medical man for a special purpose. They were singularly searching and they hit off, with a few well chosen epithets, a very great variety of different characters. I could not induce the medical man to consent to the publication of specimens of his excellent analyses, nor even of fancy specimens. Even these would have sufficed to show that if psychologists seriously practised the art of briefly describing characters, they might raise that art to a high level.

(*b*) The method I have long used for testing keenness of eyesight in persons whose powers of eye-adaptation are normal, still seems to me quite effective. It is to register the greatest distance at which numerals printed in diamond type can be read. Strips of paper cut out at random from a small sheet printed all over with these numerals, are mounted on blocks set at successive distances from the eye-hole. They can easily be changed when dirty. Fair light is wanted, but that is all that is needed for ordinary test-purposes.

(*c*) I have constructed an instrument which is not yet quite as I desire, of which the first part would I think greatly facilitate

the working with the Hipp chronograph. I had found great trouble in inducing coarse and inexperienced persons to deliver their blows aright. They bungled and struck the instrument wrongly, and often broke it. Then I made it more massive, yet still they broke it and often hurt themselves much in doing so. My present plan is to give them nothing more than one end of a long thread to hold. The other end passes round a spring reel, like the tape in a spring measuring tape. The string when left to itself will reel home much faster than the swiftest blow can travel. All that the experimentee does is to *retard* it; the quickest man retarding it the least. The string travels smoothly and swiftly in a straight line between two eyelet holes. A bead attached to that part of the string would make the necessary breaks of electric contact with great neatness. The thread has a stop to check it when it has run far enough home. My reel is nothing more than a very light wooden wheel with a groove in it, some 3 inches in diameter, and with a brass axis turning freely between fixed points. One thread passes round the axis, and is tied at the other end to an india rubber band. The other thread passes in the opposite direction round the grooved wheel, and then through the eyelet holes. The experimentee is placed well back, quite clear of the apparatus. Nothing can act better than this part of my new instrument.

(*d*) I now use a very neat, compact, and effective apparatus (made for me by Groves, 89, Bolsover Street, Portland Street, W.) which is a half-second's pendulum, held by a detent 18° from the vertical. The blow of a released hammer upon the detent gives the sound-signal and simultaneously lets the pendulum go. An elastic thread is fixed to the pendulum parallel to its axis, but about $1\frac{1}{2}$ inch apart from it. As the pendulum oscillates this thread travels between 2 bars; the one fixed, the other movable. The fixed bar lies horizontally between the pendulum and the thread and is graduated. The movable bar nips the thread when a key is touched. Doing this, constitutes the response. The pendulum itself receives no jar through the act, owing to the elasticity of the thread. The graduations on the bar, that forms the chord to an arc of 18° on each side of the vertical, are calculated and published in the *Jour. Anthrop. Inst.* early last year, 1889, together with my description of the first form of the instrument. I exhibited the revised form of it at the British Association last autumn; a brief description of it will appear in their Journal. The instrument is arranged for sight-signals as well. It is also arranged to measure the rapidity with which any given act can be performed. The experimentee touches a key that releases the pendulum; then he performs the act; finally he touches the second key, that causes the thread to be nipped.

VI.—DISCUSSION.

THE EVOLUTION OF INDUCTIVE THOUGHT.

By Hiram M. Stanley.

The treatment of Thought is one of the most meagre and unsatisfactory portions of modern psychology, and this is in part due to its being bandied back and forth between psychology and logic, and in part to the excessive attention given to physiological and experimental psychology which deals for the most part with lower processes. The logical treatment of thought differs from the psychological by dealing only with thought as expressed in language—term, proposition, and syllogism; whereas psychology investigates thought, not as formulated by its instrument, speech, but in and for itself as a mental product and process. For psychology, thought and all mentality is a sum of dynamic units which have to be investigated in their actions and reactions, in their combinations and differentiations. But logic is formal, it determines and develops the normal forms of process as given in language, and thus misses the inner nature and genetic significance of the processes it considers. Since the efforts of logic are directed toward a formal simplification and unification it fails to note much of the complexity which lies hidden in all thought; and which can only be revealed by what one may by analogy term an embryological and histological investigation. On the other hand it makes formal divisions and minute distinctions where psychological analysis will show essential unity. The descriptive and elaborative method of logic domesticates thought; but the psychological method of genetic analysis deals with uncultivated and undomesticated thought, and this is the method I shall attempt to use in discussing the rise and progress of the inductive process.

What is the *rationale* of the inductive process? How and why should mere iteration lead to expectancy of reiteration? How comes it that all minds have a native tendency to rely on the uniformity of nature and interpret the future in terms of the past, the unknown in terms of the known? It seems essentially without reason to conclude to recurrence from even the most frequent occurrence, and in fact is it not more rational to expect the contrary? If we have observed bodies unsupported to fall in 1000 instances would it not be the part of reason to suppose that in the 1001st instance this particular combination would be exhausted, and that it was time for nature to stop?

But it is to be noticed that this very reason which we have just used rests on uniformity of nature—the very law we were im-

peaching—as experienced in the past and applied to the future; only, it is a negative law of omissions, literally law of reiteration of unreiterations. Thus if reason takes the law of uniformity of nature to task it can only do so by assuming it. J. S. Mill in his treatment of this matter (*Logic* bk. iii, chap. 3, sec. 2) falls into an error. It is, indeed, true, as he says, that some occurrences repeated suggest cessation and not recurrence, as when we have several consecutive cloudy days, we expect a bright one, or having had several rainy seasons we expect a dry one; but it is plainly wrong to regard this, as he does, as a contradiction of the principle of uniformity of nature. On the contrary, this is a very good example of it. Experience of intermittent character of bad weather in the past leads to expectancy of its re-intermittency for the future, and the oftener the experience, the stronger the belief as to the nature of the still unexperienced. A negative uniformity is as much a uniformity as a positive.

It is plain, indeed, that if the future is to be apprehended at all, it must be in terms of the past. To interpret the unknown and unexperienced, to conceive it in any manner, the mind must use the terms of experience. Even the rapt dream of the mystic is a piece-work of experience. Now experience is itself a consolidation of elements, a series of groupings, established by frequent coalitions; and hence it flows from the nature of experience that the more frequently an event occurs with certain associations, the more strongly we expect it to occur. Yet, while the necessity of this inductive method of apprehension is obvious, if there is to be any apprehension of the future and unobserved, it is still the tendency of the mind to apply the principle of sufficient reason to all things, even to matters of necessity. We may apply the principle of sufficient reason to the principle itself, and inquire the reasonableness of reason, and this is in fact what we do in demanding a reason for the inductive tendency; for reasoning is a mediating, a going to that which is beyond through a ground, and the mediate term, if found at all, must be found in experience. That the future is always given, and must be given, in terms of the past is thus a principle and postulate of all reason. Reason is the obverse in consciousness of the rational, the uniformity of nature. Since consciousness is in nature and of nature, it partakes in the fundamental characteristics of nature, law, order, or uniformity, and it cognises this order.

While we cannot satisfy the speculative reason as to the reasonableness of inductive experience, we can still inquire how the inductive tendency arose as a biological and psychological fact. The reason for the rise of reason as inductive, as anticipatory function, is obvious by assuming that interest and progress of organism is rational end secured through struggle for existence. Certain bodies in uniform nature, which we term organisms, are distinguished by the peculiar quality of their uniformity. Unlike other bodies the self-uniformity is more than passive, it is active;

it is more than mere mechanical accord, it is self-adjustment through felt stimulus for the preservation of the individual and progress of the race. Experience once begun as felt stimulus, it grows by continual self-reference; that is, the new experience is always qualified by the past, the quality of response is always determined by previous experience. Experience is thus a *continuum*, an integrating and cumulating whole. But it is by serviceability that experience arises and progresses, and serviceable reactions are those which, qualified by the past, are thus useful to future well-being. Mere past reference is in itself of no value except so far as through association it determines reactions which are anticipatory in their nature. Thus a primary element in all experience is its inductive quality. Experience is then more than an increasing susceptibility of reaction through repetition. By repeated playing the violin case becomes more and more susceptible so that the quality of its response is determined by the past, but there is no element of feeling, no self-preservation and future reference, and it is only by a metaphor that we speak of the experience of a violin. Experience is practical application of repetition especially as associated, whereby the being gains for itself; and this involves some mentality. The body feels, and this present feeling is so qualified by association with past feelings as to make the consequent reaction self-preservative and thus anticipatory in its nature.

We recognise that the living animal is differentiated from the lifeless by its feeling-experience and its anticipatory reactions. The dead and non-living body never re-acts in an anticipatory manner, never defends or offends. Even the lowest organism, which is only potentially an organism, continually organising but never organised, manifests in its appropriation of food and defence from injury this peculiar power. The body is living because it maintains itself by experiential adaptation to its environment. The organism is blindly anticipatory in its activity, and without cognition; it, for instance, is enabled to avoid the hurtful before it has fully met its annihilatory force. This is accomplished in low forms by ciliae, by which, through injury to a minute part, harm is fended from the organism as a whole. By partial injury complete loss is avoided, and this is accomplished through felt pain and experiential adaptation. There is, of course, in this early form of mentality no apprehension, but there is inductive act, that is, an act which implies the value of experience in the interpretation of the unexperienced in terms of experience. This anticipatory action, which is secured in living beings by projections and extensions of the animal substance, in the form of ciliae and tentacles, is what we may term the method of incipiency. Serious harm is warded off from the whole through injury to a small part. The living being reacts to merely incipient harm, and secures by offensive and defensive measures some security. Incipient injury induces retractile and contrac-

tile movements, and those animals will have the advantage which respond the quickest and which by any chance-extensions of the body appreciate danger with least injury and loss of substance. These extensions serve not only as sensory, but also as motor apparatus to convey the organism to the useful and from the hurtful. All such action is practically appreciatory of the future as like the past; it acts upon the desirability or undesirability of immediately approaching, on basis of former experience. This reaction to the relatively small stimulus as forewarning is effected by a present pleasure or pain; there is no knowledge of object pleasurable or painful, much less apprehension of future in the light of the past, but the anticipatory value is given through unconscious integration of feeling-experiences with the present pleasure or pain. Past experiences have determined the delicacy of the reaction and given the anticipatory force. Partial experience answers for whole; the organism reacts to incipiency and thus escapes a total hurtful experience, or by active effort embraces a total advantageous experience. This is practical application of the future validity of experience, and this method of incipiency is practically the method of sign, although there is no recognition of sign. Pain acts as sign of injury and destruction, pleasure as sign of benefit and preservation before there is any apprehension of object. Mind in its earliest forms must be regarded as very intermittent pains and pleasures, gradually becoming more frequent and constant through service in the struggle for existence. These impressions of pain and pleasure do not, however, exist in and for themselves alone, they have a significance, a cumulative bearing from the past to adapt the being to the future, to time- and space-relations. That the organism does not perceive this significance is evident, but that it acts upon it is obvious. This is then a true experience, though it does not recognise itself.

We may very plausibly regard the first mental phenomenon, the first experience, to have been a pain which came as a salvation of the individual from death through inducing a reaction which could not have been brought about in any other way. This first emergence into consciousness, notwithstanding its vital significance must have been a very dull and slight form, something akin to an evanescent pain which sometimes wakens consciousness when we are nearly asleep. But through struggle for existence the organism becomes more and more susceptible to pleasure and pain; differences of intensity develop, and there is response not only for the supremely critical moment of self-preservation, but also on occasions of serious injury, of self-sustenance, and of self-reproduction. The blind, and purely pleasure-and-pain existence is, however, as we have shown, a true experience and learning by experience, and is really inductive in its quality.

It is plain that this feeling without knowledge can do much

for the organism; it can lift it above lifeless matter by securing for it self-preservative actions. However, the organism does not yet cognise this bearing of its own sensations and activities, it knows neither itself nor externality. But reaction to unlocalised pleasure and pain is spasmodic and undifferentiated, and the organism which soonest attains some recognition of part by which pleasure or pain enters gains a large advantage in the struggle for existence. Knowledge first comes as a dim awareness of something as specially connected with the suffering, till increasing in frequency these states are re-inforced from the past, and prepare the being for the future event in a truly inductive though unconscious fashion just as in the case of simple feeling. It is quite probable that the organism externalises before it localises, and knows not so much the part as paining, as a something bringing pain. But both these tendencies develop in close interaction, and the living being gradually understands its body as having a peculiar and permanent relation to its feeling-experiences. So far, however, the animal has not got beyond itself or what is in immediate contact. Yet pain and pleasure in slight degrees suffice to make reactions which ward off greater pains or lead to greater pleasures, and this is effected by such economy in differentiation as shows some recognition of part affected and object affecting. So far, there is no apprehension of succession, no knowledge of time, future or past, nor of space as distance. But it is obviously of the utmost importance to the living being to appreciate approach of enemies, rather than in tentacular fashion to experience only contacts. While it is an important gain that slightly hurtful contacts by being associated with the more hurtful cause reactions which save the individual from the more hurtful, still it is a far more important step for the unhurtful, through perception at a distance, to be associated with the hurtful so as to serve as a guard. This is accomplished through sense of smell, and specially through the higher senses, hearing and sight, whereby comparatively indifferent excitations become signs of the experienceable or of the approaching experience. The cognition of an object not simply as affecting, but as about to affect, the apprehension of any event as future, is always in terms of past associated experience, and thus this kind of experience is really inductive, although there is not as yet any inducing. In all the forms of experience which I have noticed it is plain that a renewal of an experience receives re-inforcement from the past and has anticipatory value. Induction as generalising tendency in temporal form effected by repetition and association is then to be traced in all early experience as implied and applied factor. From having considered mind as governed by mere inductive association we now pass to the consideration of mind as inducing, as thinking inductively.

The combinations of early experience are forced upon the mind, the mind does not search for them. States of consciousness are

related and co-related by association into experience, but this experience has not become aware of itself, and cannot purposely extend itself. Thinking is the mind going out after its object, a reaching out from the actual and present experience; but association is merely recipient, the mind is carried to the associated image, while in thought the mind carries itself. In association the mind is led from step to step; in thought it picks its own way. Thought is conscious and controlled association; it is associating, actively joining or disjoining. The struggle of existence awakens experience to this thought-stage where it knows and directs itself. It is obviously of the utmost importance for the progress and continuance of life that its intelligence become selective and directive, that it consciously apply experience to the still unexperienced, and so be capable of entering into the more complex reactions which are entirely impossible for the associative stage. It is thus only that beings can arise who are more than creatures of circumstance, who become rulers of circumstance by designing and applying. The evolution from mechanical experience to this self-directive stage as a permanent state is accomplished but slowly. Thought originates when, under the pressure of extreme hunger or imminent death, in some new circumstance the organism seeks a new association as the old association fails to awaken the proper reaction. Through an active learning by experience, through the impulse of adaptation intelligently applied, it saves itself in the struggle for existence. Thought may also originate when the old association revives but only partially, and the animal, pushed by stress of circumstance, through direct effort brings the association into full force by a conscious relating. When a being with awareness of the future as future, or (more broadly stated) with awareness of the unexperienced as unexperienced, searches experience for its interpretation, and does not merely let the past as explanatory come to it, this mental activity is to be termed thinking inductively. This thinking is, at first and for a long time, unconscious of its process while thoroughly conscious of the producing and of the product: the mind combines without being conscious of the quality of its act; but it is conscious of object, not in itself alone, nor as merely related, but as something which it does itself connect and relate. Association or relatedness exists in mind before power of relating arises; the action occurs before the self-acting begins, and this latter continues for a long time before the mind apprehends this as a method, and extends it indefinitely by conscious direction. In general terms, it may be stated as a law of growth of mind that experience is integrated before it integrates itself, and long before it consciously integrates itself. Development precedes self-development, and this precedes a self-development which is self-conscious. The associating stage is but a purposive and conscious carrying on of what has already been carried on in the association-stage, and the inductive character of the former will, of course,

appear in the latter stage. However, I will now endeavour to trace the inductive element in a special way by some analysis of thought in the usually accepted divisions of conception, judgment and reasoning.

It is evident that a mere feeling-experience cannot enter into a thought-stage. There is no reaching from one feeling to another, but feelings are associated into experience by a certain outward force, rather than by a free inward tendency. The association is formed, indeed, in the mind and by the mind, but this grouping is brought about without perception of relation or object, and hence there is no conscious joining. Thought as a relating of objects can only arise after the cognition of objects arises; in short, relating of knowledges must come after knowledge. Perceptual experience precedes conceptual, but still, so far as there is a true putting together in perception, there is a true thinking. A percept, even in its earliest and crudest form is never absolutely simple; it is always associated with feeling and also differentiated within itself. So far as the complex individual percept is formed by an active putting together of its elements by the mind, and not a mere passive association, we have true thinking. Thinking is essentially a conscious joining or disjoining of experiences, and this act is precisely the same in nature, whether it be a joining of characteristics in a percept or with a percept, or whether it be a combining of common characteristics into the concept, strictly so called, as representative and typical in its function. A child has tasted an orange and found it sweet; has related the sweetness to the object. Upon the presentation of another orange to the child some time after the first experience, the image of sweetness, if it is still coherent with image of yellow round thing, will be called up by mere passive association; but if not fully coherent, the child may bring it up by active association or thought. How far the image of sweetness is thrown into the mind by mere association, and how far brought in by act of thought, can only be inferred in particular cases from gesture, speech and action. In some cases both elements will be found; in some, only one. However, in this second orange-experience, as far as there is active conjoining of mental products, a definite adding to present percept of sweet taste as experienceable by conscious reference to former percept (taste-experience), we must recognise a genuine thought-process. The thinking consists in the joining of sensation of taste to an object, not as a present, but as a future experience, on the basis of some past experience. Here is a true mediation or reasoning of inductive type, and also a true concept-process, that is, a taking together, a conscious uniting, although the product is still particular. The nearest approach to expressing this psychological process in language is to say, 'This round yellow is this sweet, because this round yellow was this sweet before'. The correlating process rests upon the relating process accom-

plished at first experience of orange-tasting whereby the taste was related to the thing tasted. This relating may be thrust upon the mind, or the mind may consciously and actively assimilate. Thought in the wide sense of the term may be made to include all mediate or immediate conscious conjoining of experiences, whether the product be general or particular.

Mediacy is certainly, however, accomplished before commonness is noted, which in ordinary usage is concept-making. The grouping of the particular taste with the particular sight and touch on basis of past experience, does not give a general result. The mediate term of past experience of taste which the child brings up on sight of orange and applies to the present case does not suggest commonness, bnt constancy of experience, for at first it knows things only as identical, and not as separate, or as like or unlike. The method of this early intelligence is that of identifying, 'The orange was sweet and is sweet'; and not that of common characterising, 'Oranges are sweet, and this is an orange'. The child does not discriminate or understand that the object of its first experience is, by reason of this experience, no longer to be experienced; it has not attained notion of disappearance. It does not cognise the orange as one of a group or class, having as common characters roundness, sweetness and yellowness, and from presence of round-yellow in any instance infer sweet; but it knows orange only as this particular object of past, present and future experience. Many of the early thought-experiences of children are to be interpreted rather upon this identity-method than upon the usual interpretation of true concepts. Thus the child who calls every person of certain age, dress, &c., 'Papa,' is not thinking of a papa, or class of papas, but of the papa. This is mistaken identity: the common and like is the same, and the child requires considerable discrimination before it attains to notion of papa in general. Same and not-same are discriminated before like and unlike, and hence young children use common names as proper. Now the mental product achieved by the child, which, as expressed in words, we term the papa, may be styled a particular concept, a gathering together of sight-sensations, and associating sound- and touch-sensations with these so that any generally like group of sight-sensations enables the child to call up on basis of past experience the associated sound and touch, to expect the gentle word and caress. The child in identifying the orange, 'This round yellow thing is the sweet thing,' is bringing together with a certain general force, not of common characterisation, indeed, but of temporal significance as permanent grouping. Animals and young children think mostly on the identifying plan; they join to and expect for a present experience what has been conjoined with it in past experience, but the object is same-not like.

How then does the child come to knowledge of things as like, to form a class of oranges after regarding all oranges as the

orange? Pass oranges before a young child one after the other so that one only is in sight, and the child will probably know only one orange as the same continually re-appearing. The image formed will, however, be more or less composite, the mental product will be a concept-image, as being a re-inforcement and exaggeration of common characters and a suppression of individual; but for practical purposes it is still a particular concept, that is, the child applies it to the one and not the many, and does not recognise its representative nature. A general image as a group of common qualities may be thus attained before consciousness of this generality is reached.

If now two or three oranges are presented to the child at the same time, it will learn to discriminate them as separate co-existences, having characters in common, roundness, yellowness, &c.; the objects will be recognised as individuals belonging to class round-yellow things. Here a general image having a general import is achieved. The particular characters round, yellow, sweet, which always centred in and made up the individual orange, are recognised to have general scope in applying to many objects. Groups of characters had been achieved before by particular thinking, but now by general thought, groups of characters as common are formed. From the practically co-incident impressions it gains the notion orange, so that it recognises new individuals as individuals, and not as the individual or single object, as in the earlier and cruder identity method of thinking. The mind now—instead of saying 'Same impressions, same object'—says 'Same impressions, like objects'. Instead of making an object as a group of qualities, it makes a class of objects having the group of qualities in common. Concept-forming is thus often but an extension from what I have termed the particular concept; the group of qualities formed as characterising the thing is through experience with co-existences predicated of things. Notion or idea of the orange precedes notion or idea of orange; but both are truly notions or concepts, a taking together of impressions, one of particular, the other of general import. The general significance of the particular group is first forced upon the mind by experience, but soon the mind generalises as well as notices generalisations brought to it. Gradually the mind obtains power to generalise not only from co-existences but from successions, and later still to generalise by abstraction, to compare and pick out common features amidst the unlike, to search for unity in diversity.

The rise of generalising power is through the struggle for existence, it originates like all other mental processes in practical needs. Law is thereby not simply acted upon or merely recognised as in the associative stage; it is definitely sought for and applied. Art arises, and also science. The ability, given by generalising power, of dealing with things in the lump, becomes of signal service, and specially distinguishes man. But the

primary value of the concept in all its stages is not as a summation of experience, but as a guide for the future. Through reiterated grouping the concept-group is recognised as permanent factor so that one element of a group being given other elements are expected through a conscious assimilation with the past experience. The concept answering to the word orange, for example, is the mental product recognising a constant co-existence of certain qualities of shape, colour, size, taste, &c., so that from occurrence of one or more we infer other or others. Concepts are the inner groupings, the mental synthesisings, which interpret the outer groupings that we term laws of nature. In all this we see the inductive element in its conscious form, experience developing itself by anticipating future in terms of past.

We have now to consider briefly the psychological nature of judgment and reasoning with special reference to the inductive feature. Logically judgment is any connecting, *plus* affirming of reality, as effected through the copula. The copula is made not only to denote relation, but reality of relation, to express not only the act of connecting, but also its validity for the case in hand. Psychologically, judging may be regarded as any thinking, as any relating without reference to the things related, whether it be a joining of the concept 'reality' to some other concept as a concept-forming process, or any joining of other elements. I have already discussed the nature of relating *per se*, but on the topic of judgment a word is to be said about the proposition-form. In all thinking there are the two things joined—subject and predicate in language-expression—and the act of joining, or copula in language-expression; thus all thought is capable of the proposition-form. Indeed, the word-form cannot express a thinking but only a thought as a consolidated and single product, and as a sign of process. The word is a summary of process and relations, but it cannot express process as concept-forming or judging. The word, orange, signifies for the mind by symbolic and short-hand method, 'Thing is sweet *plus* thing is yellow, &c.'; but as far as process happens, and not simultaneous composite representation, the process is capable of proposition-form. All relatings or joinings even of particulars to particulars are of the proposition-type, and I must dissent from the common view that two percepts cannot stand in subject-predicate relations. As I have before discussed, the relating of particular to particular is thinking, and to say 'This sweet belongs to this yellow' is awkward indeed, but still psychologically proper. Every proposition on the other hand is susceptible of analysis as expressive of concept-forming relating. The proposition 'Man is mortal' is expression of a mental process of joining; the concept mortal is either attached to or detached from the concept man, according as we consider the process as synthetic or analytic. If it be a grouping or concept-forming in full sense, it means that in forming the concept man, we add to the already gathered qualities the quality 'mortal'

on basis of experience. The child first notices deaths in cases of John, Peter, &c., whom it knows to belong to the class 'men,' forms the concept 'mortal' and adds it by generalisation to the whole class and enlarges concept 'man' by one quality. This proposition, as denoting inductive concept-forming, expresses the act of incorporating on basis of experience the quality mortal into the quality-group man. As analytic, as a detaching of what has been grouped, the proposition still expresses joining, and until the statement becomes purely formal and practically meaningless the re-joining is always a strengthening of the concept, and formative in its value.

All uniting or relating is, however, more than a bare connecting; it is a definite mode of relating, it has a form; and the first and fundamental form is that of time and space, by which all relating has the inductive quality of relying upon the past for the interpretation of the future. But thought as self-active mentality is specially stimulated and controlled by the form of reality. All relatings are not, however, influenced by sense of reality, and hence belief is not coincident with judgment in the large sense. Affirmation or denial of actuality or reality is a kind of joining, but is not joining *per se*. The infant joins taste of sweetness with percept round-yellow for the first time and for many following times with no reference to reality or unreality. 'This round-yellow is this sweet' expresses a mere connecting, a bare relating, but as neither real nor unreal. There is no emphasis laid on the copula by which it expresses more than a mere joining. But let the perfect tranquillity of the child's experience be broken in upon by discord of appearance and reality, let the child once have a bitter experience with a round lemon, then its future conjoinings of round-yellow and sweet will be more or less tinged by sense of possibility of error, and emphasis will be laid on the copula, 'That *is* sweet'. Through other such experiences with other of its thought-groups, the child generalises to the universal significance of reality and unreality for all its thinking; hence, all conjoinings with their copula-expressions attain a new force and quality from this induction. In the light of fallibility as making up a part of the concept 'experience' all thought-experience modifies itself by this self-relation. Reality becomes so constant and universal for all thought-life that mature thought can never escape it. Hegel tried to rise superior to the notion of existence, but psychologically, at least, he failed. The conception or induction of reality becomes a necessary form of thought by being united with all unitings. Judgment in the narrow sense may be defined as all those relatings in which the reality of the relation is affirmed or denied.

Lastly a word on the nature of reasoning. Reasoning is mediatorial; the joining is accomplished through one or more mediates. Most if not all thinking is by mediating; joining

proceeds only upon ground or basis, whether recognised or not as such. 'Kings are mortal' is the language-expression of a conjoining effected either through the particular mediate term, John, or terms John, Peter, &c., or through the general mediate term men. In both cases the conjoining is effected through subjoining of the mediate term to both the elements to be conjoined. In the first case the process is: 'John is mortal, John is king, therefore kings are mortal'. This relating of king and mortal is strengthened by subjoining for other particular mediates, Peter, James, &c. In the second case the process is: 'Men are mortal, kings are men, therefore kings are mortal'. In both cases the appeal is to constancy of coherence of a quality to a quality-group, in the first, mortality coherent with king John, hence coherent with kings; in the second, kings have mortality because mortality is coherent with the group man = kings + others. In both cases the generalising tendency, that is, the inductive quality, is the main point and not the method of mediation. In both processes the concept king is filled out by the additional quality mortality, and there is real gain in generalising and concept-forming whether the mind accomplishes it by the more special or more general reference. Induction in the large sense is thus inclusive of both induction and deduction in the restricted sense as determined by the mode of mediation. Inductive thinking, as we have treated it, is the joining which generalises, whatever be the means used to this end. Induction as generalising tendency is imbedded in experience, and is the largest factor in all its development.

"THE GENESIS OF THE COGNITION OF PHYSICAL REALITY."

By JULIUS PIKLER.

I had just completed an Essay, in which I had long been engaged, on "The Psychology of the Belief in Objective Existence," when Mr. Stout's article, "On the Genesis of the Cognition of Physical Reality" appeared in the January number of MIND. The contents of that article were so diametrically opposed to my own views on the same subject that the only conclusion I could arrive at was that either Mr. Stout or I must be seriously wrong. Careful reflection only confirmed me in my own views. This has induced me to append to my Essay (which will soon be published in a small volume) some observations on Mr. Stout's article, and I desire to submit them first to the readers of MIND.

Mr. Stout's Criticism on Mill.—I must begin with a brief survey of Mr. Stout's criticism on Mill's famous chapter, "The Psychological Theory of the Belief in an External World". The contents of half of his first paragraph may be summed up in the following sentence: "[Mill's] possibilities, so long as they are not realised, are nothing actual, *i.e.*, nothing at all". But this objection amounts only to a bare denial of Mill's doctrine. It is merely asserting of a thing that it is *not* white, when someone else maintains that it *is*. There are, in fact, two sorts of actualities: actual presentations and actual objective existence (or occurrence). Possible presentations do not belong to the former class of actualities; the latter class of actualities, on the other hand, are said by Mill to be nothing else but possible presentations. Mr. Stout's statement therefore is simply a contradiction of what was maintained by Mill, and, as such, proves nothing.

The same remark equally applies to his next objection. He says: "[Mill's] view may or may not be true; for our purpose it is sufficient to point out that it is diametrically opposed to the irresistible conviction of the ordinary mind. Mill's account of the material world may represent that world as it really is; but it certainly does not represent it as it normally appears to us." Now I, for my part, find nothing in my consciousness diametrically opposed to Mill's account. On the contrary, when, ignorant still of philosophy, I first heard these doctrines they appeared to me as irresistibly true. No doubt, I had not arrived of myself at the formulation of the doctrines—just as my teachers anticipated me in the matter of the axioms of mathematics; but I no less firmly believe in the one than in the other. This conviction is shared by that larger portion of philosophers who are not realists. In their opinion as well as mine, men generally understand by the expression that a material thing somewhere

exists, acts and changes, nothing else but that certain presentations are possible there.

But Mr. Stout, in the same paragraph, goes farther. He says: "I think we have good reason for saying that it did not so appear even to Mill; for he speaks of changes taking place in the grouped possibilities. . . . . Now a change in a naked possibility is at the time when it is supposed to take place a change in nothing, and a change in nothing is no change at all. This could not be what Mill really meant, but only what he fancied himself to mean." If this were true, if Mill's formula did not cover the objective changes in things, if he contradicted himself, this might constitute a real argument against his theory. But, in point of fact, change occasions no greater difficulty to that theory than unchanged existence. By objective change Mill understands only the possibility of a *presentation of change*. Mr. Stout will not deny that there are presentations of change, and if this is true, then there are also possible presentations of change, or possibilities of such presentations of change quite as much as there are possibilities of presentations of things.

The second paragraph of the criticism is, again, a simple negation of Mill's theory, and may be passed over with that remark.

The third paragraph points the following quotation from Kant against Mill:—"The apprehension of the manifold in the phenomenal appearance of a house that stands before me is successive. The question then arises, whether the manifold of the house itself be successive, which, of course, no one would admit." This objection can be easily disposed of. That the different parts of the house are coexistent does not mean, according to Mill's theory, that there is a possibility of perceiving them simultaneously, but it means that there are a number of different simultaneous possibilities of presentations, from amongst which the individual may select any at will. Our belief that there is a world consisting of coexisting things means, according to this theory, nothing else but our belief that the possibility of selection from amongst many different presentations subsists for us at any moment.

All the arguments of Mr. Stout are therefore of no avail against Mill.

Mental Activity and Not-Self.—The following quotation gives what Mr. Stout regards as the most essential part of his own theory:—

"Apart from operation of extraneous conditions, the redistribution of attention normally takes place in such a manner that the focussed presentation *A* gradually and continuously disappears and gives place to a nascent presentation *B*. . . . . In all these changes . . . . the transference of attention is orderly and continuous. . . . . But this orderly redistribution of mental activity determined by interest and preformed associations, is perpetually modified and controlled by interfering conditions. . . . . As I sit absorbed in study, I am rudely interrupted by the sounds from a barrel-organ in the street.

. . . In so far as the mind becomes in this manner definitely aware of the limitations and interruption of its own activity, it finds itself confronted by a problem, which it can solve only by reference to an activity other than its own. . . . This seems to me to be an indispensable moment in the development of the perception of physical reality. *The antithesis of mental activity and passivity*, when it becomes sufficiently definite, enables and compels the individual to posit some agency separate from, and independent of, his own private experience."

To this theory there are opposed three facts, each of them sufficient, singly, to refute it.

The first is that, apart from exceptional efforts, the feeling, sensation or presentation of mental activity is but a very faint and indistinct presentation, at all events so faint and indistinct that the interruption of its orderly redistribution by the occurrence of "interfering conditions" cannot induce the individual to attribute these external conditions to another activity which he would conceive to be modelled after the former. On this point I appeal to general consciousness. Some readers may have had a contrary individual experience with regard to the intensity and distinctness of that presentation. But that it holds good with the majority of mankind is proved by the circumstance that that presentation or feeling, as conceived by Mr. Stout's theory, is only a discovery of a few, more modern, psychologists. Earlier psychologists speak of activity of mind, but they know nothing of any such feelings of it. The belief in the objective existence of the external world is nearly fully developed in the child as soon as it begins to employ coherent sentences in speaking. According to Mr. Stout the child at that age must have got beyond this observation, generalisation and inference: 'An agency operates within me in orderly and normal fashion. It is sometimes interrupted. When this happens it is the effect of an external agency.' Mr. Stout thus supposes the child to be invested with a capacity for self-observation superior to, and more precise than, that actually betrayed (in Mr. Stout's opinion) by the large majority of the professional psychologists of all ages. This cannot be correct. In point of fact such observation and generalisation cannot really be performed by the child.

The second fact is that the feeling of what Mr. Stout calls the interruption of activity, is likewise so indistinct that it cannot produce the result attributed to it. But this will be more apparent in establishing the third fact.

This third fact constitutes the strongest argument against Mr. Stout. It consists, on the one hand, in this that the so-called interruptions take place not only in consequence of presentations of things and occurrences of the external world, but also through subjective presentations. There is no process of reflection so regular as to be exempt from being "interrupted" by sudden flashes of thought. Interruptions are likewise caused by

sudden cravings, by unaccountable good humour or depression, by impatience, by memories, by hunger, thirst, sleepiness, fatigue, or bodily ailments. On the other hand, presentations of external things and events appear and follow each other—oftener through our own activity and movements than of themselves—in just as regular succession as the thoughts during uninterrupted reflection. Our motor activity greatly resembles mental activity in its stricter sense. Every kind of presentation therefore may appear and disappear in both a gradual and orderly manner (as a consequence of our own activity) and an interruptive manner. The pretended "fundamental and pervading incoherence within the sphere of individual experience" therefore, unfortunately for Mr. Stout's theory, does *not* coincide with the division between thing-presentations and subjective presentations, and hence cannot be identical with it. The objects that come into the way of mental activity and must be worked up by it, are presentations in general, subjective as well as presentations of things,—objects in Locke's sense and not only the objects of the external world.

Anthropomorphic conception of Thing-presentations. But the above "indispensable moment," is, according to Mr. Stout, "only one step, although a most important one, towards the solution of the problem before us". Farther—

> "It is necessary to show how the contents of tactile, visual and other presentations in all their concrete variety come to be apprehended as existing independently of individual thought and perception . . . . The mode in which this takes place is in general as follows. Certain changes within the field of consciousness are uniformly attendant upon our own motor activity. Similar changes also take place of themselves apart from any action of ours. In order to make our experience self-consistent we are constrained . . . . to regard these variations as due to something not ourselves exercising a motor activity analogous to our own."

Mr. Stout, throughout, describes the child as continually busy propounding anthropomorphic hypotheses concerning his thing-presentations. Although I know that not only Mr. Stout but almost all of the more modern realists would like to make us believe this fact, yet I decline to do so unless other proofs are adduced in its favour than the mere assertion that the child is "compelled," "impelled," or "constrained" to go through this sort of mental activity. Moreover, weighty proofs speak against it. When we are grown up we have no anthropomorphic conceptions of this kind. We do not conceive inanimate things as making efforts and possessing activity similar to our own (for it is precisely on this account that we distinguish them from animate beings), and not one of us can remember a change of his ideas in this respect. It is equally certain that one of the first distinctions we make is that between things animate and inanimate. We never see inanimate things moving towards us, unless they are carried by an animate being, or wind, or water. The primitive

man anthropomorphises the wind; whether he does water, too, I am not aware. Animate beings are conceived by every individual, at a very early stage, as possessing internal activity similar to his own, but there is no necessity whatever, nay everything speaks against it, for his also investing with such an activity things moved only by animate beings.

But, granting the child's anthropomorphic mode of thinking, I fail still to perceive its bearing on the problem in hand. Even if Mr. Stout's description of the child's manner of thinking were entirely true, the only objectively existing thing which the child so far gets to know would be the agency supposed; for that behind which the child supposes the agency to be consists of his presentations, and so far the child had no reason whatever to suppose that these colours, sounds, &c., continue to remain after they have ceased to be present to him. The anthropomorphism of primitive man is, too, of such a nature that with every individual it must be unavoidably preceded by the belief in the objective existence of things.

Persistence. How does it come that we believe things to persist when they are not before us? According to Hume and Mill this is what is first developed, and furnishes the ground for believing that our actual thing-presentations are presentations of objectively existing things. According to Mr. Stout, the process of development is just the reverse: it is through the supposition of external agency that we first of all obtain the conception of our thing-presentations as independent presentations, and only by this means do we afterwards arrive at the belief in their persistence. The step (truly all-important and indispensable) takes place in the following manner:

"We saw in § 5 how the individual is constrained to posit some agency beyond the range of his own private experience . . . There thus arises a well-marked division between self and its modes on the one hand, and the not-self and its modes on the other. The not-self must, by the conditions of its psychological genesis, be presented from the outset as that which changes or remains unchanged independently of this or that mode of motor activity on the part of the percipient. Hence variations in the content of perception, if and so far as they are traced to the motor activity of the percipient, are presented as changes in the self, *i.e.*, in the body-complex, not in the external object. In the midst of such variations this object may remain unchanged . . . So far as resisted effort is followed by change in the content of sense-perception, we are constrained to refer the change, as such, to our own exertion; on the other hand, so far as the change is only partial, *i.e.*, so far as the resisting thing persists unchanged, we are constrained to interpret its persistence as uniformly connected with the kind and degree of the counter-effort, which we represent as distinct from our own. The experience of resistance is also an experience of persistence . . . All resistance is resistance to change . . . and in the normal course of human experience, the individual percipient is constrained to apprehend it as such."

This process of inference, as described by Mr. Stout, must have

surprised every reader. It is attributed by him to a child under three years of age! Surely, it is not at all right to ascribe such reasoning to the child, when the origin of the belief in objective existence can be shown to have arisen by means of such simple induction as may be seen constantly practised by grown-up persons.

Let us place by the side of each other the two accounts of the process of thought of the child under three years of age, and of how it may be supposed to learn to speak.

According to Mr. Stout:

I feel a mental activity within me. It operates now regularly, now again it is interrupted by the appearance of certain presentations (coloured surfaces, sounds, smells). *These interruptions cannot be but consequences of another agency similar to mine.* These presentations, move, resist, &c., like my body; these facts, too, necessarily must be preceded by efforts similar to those of the agency I am accustomed to feel within me.

These presentations are called by my parents, clock, dog, &c., or things. Pointing at these things they are in the habit of telling one the other that they *are* there. *By this my parents mean that an agency, independent of the agency within me, operates within these things.*

Those presentations change in consequence of my activity. They resist my motor efforts. All resistance is resistance to change; it is persistence. Hence those presentations have not the tendency to change by themselves. Their changes belong to the history of my agency and not to that of their agency. There is no reason for me to suppose that these presentations appear and disappear of themselves, as often as they appear before me or cease to be present. I therefore believe that they (the things) remain, persist, exist even after they cease to be present to me.

According to Mill:

I am sitting. I see before me different coloured surfaces which are called by my parents walls, pictures, clock. If I put out my hand I touch a surface which is called a table by my parents. In a word, all these surfaces are called things by my parents. I hear sounds of which my parents speak in this way, 'The watch is ticking'. I see through the window sometimes a clear sky, and clouds at other times. My parents say 'The weather changes'. If I take a piece of chalk between my fingers and draw it along the table I see that there is a white spot left; if I pass over the table with my fingers alone I see that there is no spot left. In the former case, my parents say that the chalk produces a spot.

If I turn my head away I no longer see the same surfaces, but I see the wardrobe, &c.; if I turn my head back I again see the former surfaces. I have similar experiences if I stretch out my arm in another direction and place it again on the table. If I rise and go away out of the room into the next room, as they say, I see again other things, experience other changes and actions, and hear other sounds. I perceive yet other things, changes, actions, and hear other sounds if I leave the room and go into the yard. I experience the same things when I return to the second room and then to the first which I experienced there before. Whenever I took this walk, the consequences

were the same. *I believe that this will be always so.*

My parents when they sit near me in the first room always say that there are certain things in the next room and in the yard, (namely, the same which I can see there). By this they mean that certain surfaces can be seen there, &c. They further say that certain events (changes) happen there (namely, those that can be perceived there); that one thing produces on another thing (namely, which I can observe being there near it) a change (namely, that which happens to the other thing and which could not happen to it if the first thing were not there). *By this that something is there, that something happens there, my parents therefore mean that something can be perceived there, and by this that one thing produces a change (acts) on another thing, they mean that a change might be observed there on the latter thing which could not be observed if the first thing could not be perceived there.* What I therefore believe, I, too, must state briefly thus, *that there are certain things in the next room and that certain changes and actions take place there.*

If we reflect that of these two processes of thought the one Mr. Stout ascribes to the child consists of a number of bold realistic hypotheses, capable of no proof, while that ascribed to it by Mill involves the most ordinary inductions necessary to life, we may well feel disposed to accept Mill's theory rather than that of Mr. Stout, and to express our conviction that after all we are more indebted for our belief in an external world to the regularity than to the irregularity of our sense-experience.

Budapest.

VII.—CRITICAL NOTICES.

L'Avenir de la Métaphysique fondée sur l'Expérience. Par ALFRED FOUILLÉE. Paris: Félix Alcan, 1889. Pp. xvi., 304.

As will be expected by readers of M. Fouillée's previous contributions to philosophy (see MIND v. 135; vi. 137; ix. 590; x. 448), this is a work containing much vigorous and independent thought. It offers a criticism and attempts a conciliation of present philosophical methods from the point of view of the theory of *Idées-forces*, first proclaimed by the author in his *La Liberté et le Déterminisme*, published in 1872. We have here, indeed, only the "prolegomena" to the substantive and systematic exposition of the *Principes généraux d'une philosophie des Idées-forces*, which, with a *Psychologie des Idées-forces*, is announced as in the press. But, apart altogether from this theory which the author would have us regard as the "moral" of his book, its discussion of philosophical method and of the relations of philosophy and science is of real and permanent value.

The true metaphysic, according to M. Fouillée, is "founded upon experience". As alchemy prepared the way for chemistry, so has ontology done the like for inductive metaphysic or the philosophy of experience. The transition has been effected by Kant's Criticism, the formality of which must be filled out with the content of experience. The true method of metaphysic thus reached is identical with the *a posteriori* inductive method of science. In a word, metaphysic ought to be the radical analysis and synthesis, in its content as well as in its form, of that outer and inner experience which in its totality constitutes the real. As for the distinction between phenomena and noümena, it is simply the distinction between incomplete and complete experience; and hence, while metaphysic can never attain its ideal, or complete its work, it is at every step in contact with reality. And if the synthetical part of metaphysics is, like that of science, hypothetical, or "necessarily conjectural," its analysis is equally matter of certainty.

This metaphysic of the future is only yet being organised; but its method, according to M. Fouillée, is already widely recognised as the true one. Even in Germany, "that country of great speculative adventures," the philosophy of experience has its disciples in Schopenhauer, von Hartmann, Lotze and Wundt. In England the new leaders of philosophical thought—Spencer, Clifford, Mr. Hodgson, and even the Neo-Hegelians, have emerged from "the transcendental moonlight" into "the broad daylight of experience". While, in his own country, the author can point to MM. Taine, Ravaisson, Renouvier, Guyau and others, who "have, from very different points of view, invoked experience".

The work is divided into two parts, dealing with the relation of Metaphysic to Science and to Ethics respectively, or with Scientific Positivism and Ethical Evolutionism. As against the former tendency of thought, which embraces Agnosticism as well as the stricter "Positivism," M. Fouillée maintains "la perennité de la vraie métaphysique". While Positivism rightly condemns "the usurpations of metaphysic, and its encroachments on the domain of the sciences, it does not touch the true metaphysic, which keeps to its own problem". Nor can positive science ever take the place of metaphysic; even if it were "unified and entire," it would still retain its partial character. "It would not answer all the questions which the human mind, constituted as it is, cannot help putting to itself," or rather which "the universe, through the medium of man, puts to itself". The progress of science and that of philosophy, instead of being opposed, are really complementary; for "the problem of a general conception of the world agitates all modern thought and science, and is indeed one of the characteristic marks of our time".

The formation of such a universal and final conception is the proper task of philosophy. It will not suffice, as Positivism holds, to "place in juxtaposition the most general results of the particular sciences"; it is necessary "to define, explain and justify the cosmical conception which disengages itself from their special investigations". Indeed, the unity and harmony of their results is itself "a metaphysical belief," and can only be established by "a speculative interpretation" of these results. Thus metaphysic is the ideal and inspiring hope of science, furnishing it with the very idea of a "universe," which it endeavours progressively to realise, and also with its "most fruitful method" of "ideal conconstruction" or hypothesis. And, in the execution of its own proper task, metaphysic "only continues the process of science itself, and seeks a construction vaster and more fundamental, in which all the particular constructions of the different sciences may be embraced," and which if not capable of verification, like scientific constructions, by reference to special cases, is yet verifiable by its "adaptation to the entire system of our knowledge".

True and valuable as this statement of the relation of science and philosophy is in the main, it may be questioned whether the author succeeds in vindicating the independent existence of metaphysic. If the whole task of the latter is the summation and correlation of scientific results, why should it not be given over to the sciences themselves? If they are not severally competent to it, why not conjointly? Do not the various sciences, in a sense, revise and correct one another's results, and make the necessary advance from lower to higher conceptions? And might not the final result of this scientific process be the attainment, by science itself, of the universal and metaphysical conception of things? It seems, therefore, that if metaphysic is to establish its *raison d'être* as a permanent and independent

inquiry, it must take its own fresh view of the whole which the special sciences have dissected, and formally, if not materially, investigate its own problem in its own way.

In the second part of the book, M. Fouillée seeks to show that Ethics, like science, is founded on metaphysic or a speculative view of the universe; in particular, that the "physic of ethics" offered us by the evolutionists is based upon a "metaphysic of ethics". Ethics is just a "metaphysic of the good": "ethics, properly so called, is an inquiry concerning the destiny of man, the meaning of the universe, and the value of existence". Such metaphysical questions are inevitably raised by the fundamental conceptions of "positive ethics," pleasure, life, evolution. The theory of evolution itself is a "metaphysic of nature, a cosmology which presupposes principles and hypotheses transcending sensible experience"; and, in its ethical application, we must ask for the proof of Mr. Spencer's "identification of the natural term of evolution with the moral good".

There is, indeed, a positive science or "physic of morals" (comprising psychology and sociology) which "presupposes no opinion about what morality is in itself," *viz.*, "that natural history of the sentiments which has been so admirably treated by the disciples of Helvetius, Bentham, Comte, Mill, Spencer and Darwin". This part of ethics is "scientific and even empirical". But there is another part, which is "hypothetical and metaphysical," *viz.*, "the study of the universal ideal, and of the means employed by the will for its realisation". This metaphysical reference is implied in moral life itself; "the highest action is just a speculation on the Great Unknown, an act of devotion to a metaphysical hypothesis". The attainment of the evolutional ideal implies such practical speculation; and, since "the conciliation of egoism with altruism must always," as Mr. Stephen admits, be imperfect, "the physic of ethics will never be able to dispense with that metaphysic of ethics which it considers superfluous".

But, if Ethics is founded on Metaphysic, it is also true, in another reference, that Metaphysic is founded on Ethics. Not, however, in the sense maintained by the advocates of the Kantian or "moral method" in philosophy. The question of the significance of morality, prejudged by Kant and his followers, is just "the metaphysical question *par excellence*"; "the moral supremacy is a thing to demonstrate, and not a principle of demonstration". The "moral method" is followed, in a somewhat different sense, by MM. Renouvier and Secrétan and Prof. William James, who hold that science or certain knowledge is founded on voluntary belief. The ultimate metaphysical alternative, according to M. Renouvier, is: "Is there only a natural order, or is there also a moral order, to which the natural order is subordinated?" The answer to this question, he holds, we cannot *know*, or even infer by scientific probability. We can

only *believe*, or not believe, *freely* in the existence and value of the moral order. The decision is a grand wager, *le pari moral*.

M. Fouillée's criticism of this "moral method" is that the faith which inspires scientific procedure is not "passionate or voluntary"; while metaphysic, "far from basing its conclusions upon beliefs, whether moral or emotional, tends to eliminate entirely all that resembles belief, or any intervention of passion or will in the question of knowing what *is*". "If I perceive that I am the author of the truth which I embrace, I say to myself at once that I embrace a shadow, and I cease to believe in that pretended truth." The so-called 'postulates' or 'articles of faith' are only "data of experience not analysed or not explained, or inductions founded on these data". The whole theory results from "confusing the act of will which decides to realise an ideal, with the act of intelligence which affirms the objective reality of that ideal". It is for metaphysic to "ask of *experience* itself both its motives of doubt and its motives of hope. We believe that the philosophy of evolution, more broadly interpreted than it usually is, will furnish both."

The "broader interpretation" of scientific truth generally, and of the doctrine of evolution in particular, rests upon M. Fouillée's view of *idées-forces*, to which attention has already been directed in MIND, and an estimate of which must be reserved until the appearance of the systematic exposition of it announced by the author.

JAMES SETH.

Les Lois de l'Imitation. Étude Sociologique. Par G. TARDE. Paris: F. Alcan, 1890. Pp. viii., 432.

The characteristic that first strikes the reader of M. Tarde's book is its geniality and brilliancy in detail. With all this brilliancy it is, at the same time, the clear presentation of a definite main thesis to serve as the foundation of a scientific sociology. Earlier writers, as M. Tarde points out, have often been struck with the social importance of the phenomena of imitation; but no one has hitherto sought to constitute the whole science of sociology by generalising those phenomena. What has hitherto chiefly been attempted is rather to bring the facts of society under some physical or biological formula. A purely social expression of the facts has been thought not to be scientific enough. It is true that sociology is based on physics and biology; for society involves physical and vital as well as purely social facts. The definite constitution of sociology as a separate science requires, however, that there should be some kind of uniformity that is distinctively social, and which cannot be fully expressed in biological or physical terms. This uniformity M. Tarde finds in "imitation". All scientific laws are cases of

"universal repetition". The social form of repetition is imitation, as its physical form—to name the most conspicuous—is vibration, and its vital form generation. Imitation is here a psychological term, being the name for the uniformity displayed by minds in society. "Pure sociology," or sociology as far as it is not based on the generalisations already attained by physicists and biologists, is concerned exclusively with this mental uniformity. Within the individual mind a new idea raises up likenesses of itself, and tends to assimilate the ideas with which it has come into relation. So, when men dwell together in society, an invention or discovery, a new mode of thinking or feeling, arising in one mind is "imitated" in other minds, and, as its last result, gives origin to actions having all a certain resemblance because they have their spring in similar desires and beliefs.

"Imitation" thus gives to social phenomena that element of generality without which no science can exist; but the facts of society are not wholly constituted by this generality. What is imitated is in the end always some idea or feeling that arises in an individual mind. The whole movement of society depends finally on the initiative of individuals. From point to point of the series of inventions and discoveries made in the course of history, certain relations of dependence may be detected. It can often be shown that particular discoveries and inventions must have preceded others. There is consequently a place for speculations as to the order of the individual causes of social progress. Such speculations constitute the "philosophy" of society or of history. By the "science" of society the individual causes in their actual grouping must be taken as original collocations, which it is not its business to go beyond. They have a certain "discontinuous" and, so to speak, accidental character, which must always withdraw them from complete scientific explanation. All the sciences that are concerned with given facts, and not merely sociology, have to assume empirical data of this kind. Individuality, in some sense, is at the root of all real existence.

Every kind of intellectual or moral assimilation of the beliefs or desires of other persons being called "imitation," and every new mode of thinking or feeling an "invention," the aim of social science may be defined as the ascertainment of the laws of the imitative propagation of inventions. Socially, as the author puts it, all is invention and imitation. Resemblances between the members of different societies, when they are not due to imitation are due either to the common pressure of similar circumstances and needs or to heredity. They are therefore rightly called "natural," as not being distinctively human or social.

In the application of his general conception M. Tarde makes considerable advances towards the establishment of definite laws of the social transmission of ideas. His distinction between the "logical" and "extra-logical" factors of social development, for example, of itself clears away a good deal of obstruction from the unprepossessed study of society; and his positive laws of the

action of the two kinds of causes are far-reaching and generalised from large masses of facts. These laws will be the main subject of what follows; but first M. Tarde's definition of the "social group" must be stated, together with an important deduction from it.

The social group is defined (ch. iii.) as a collection of beings that imitate one another or that have been brought to resemble one another by imitation of the same model. This definition M. Tarde opposes to the definition of a society as consisting in a union of beings for mutual economical aid. In support of it, he puts various cases of actual societies, and asks whether there is the most genuine "society" between those persons who most resemble one another or between those who have most economical need of one another. Evidently the truest society is between those who resemble one another mentally, though they may be rivals, and not between those who, needing one another economically, have no mental resemblance. Such resemblance as is required to constitute a genuine society can only be produced by some form of "imitation"—such as common education or common traditions. Hence a judicial definition of society would be better than an economical definition. For the "mutual determination of engagements or consents, of rights and duties" depends on a certain degree of mental resemblance, and arises only among those who recognise their similarity to one another; while economical relations are rather an expression of the constraint exercised by external circumstances, than of the genuinely social impulse, and can exist without the resemblance due to imitation. Far from denoting an advanced state of civilisation, the tendency to subordinate the consideration of rights to that of services loses its force in proportion as humanity improves. Society in the sense of "social organisation" certainly involves economical aid; but in the sense of "sociality" it does not. Sociality, or the purely social element in society, is free individual impulse, propagating itself by spontaneous imitation. As the social comes more and more to dominate the vital and the physical, purely social relations will gain more control over economical relations. Discussing further on (ch. v) the description given of "our contemporary epoch" as one of "science and industry," M. Tarde remarks that to describe it thus is to say that it is occupied with means rather than with ends. Though philosophy has not been wholly neglected, special science has advanced more rapidly than the philosophy of science; and there is a far greater disproportion between the accumulation of industrial means and their employment for the ends of civilisation. A not very distant age may see the subordination of industry to æsthetic and ethical ideas.

So far as the imitative propagation of inventions and discoveries is due to social as distinguished from physical and vital causes, its causes are in part logical and in part extra-logical. Of the innovations suggested by individual minds, some are taken up and imitated in preference to others because they are found truer

or more useful. Their propagation is thus "logical or teleological". The way in which logical or teleological imitation proceeds is this. At the earliest stage of social development there is coexistence of all inventions in all kinds without any consciousness of mutual incompatibility. Progress takes place by "accumulation". As inventions continue to accumulate, contradictions declare themselves. There is now a series of dialectical struggles, each of which ends in the victory of one of two opposing ideas or in the supersession of both by a third. First the contradiction is perceived by individual minds. When the phase of mental hesitation has passed, and each person has decided for one idea or the other, the struggle becomes a social struggle between two parties or sections. Progress now takes place by "substitution," peaceful or violent, of a conquering for a defeated idea. This in turn does not go on indefinitely. By a process of elimination a system of principles is at length left behind, within which all later inventions take their places in order. Thus there is once more progress by accumulation; but the ideas accumulated, instead of merely not contradicting one another, now support one another. All this, of course, goes on in a series of rhythms, not in three continuous stages extending over the whole of human history. Take, as an example, the growth of a language. At first every new name or grammatical form is a new acquisition, and all can coexist. In time the grammatical forms evolved begin to come into collision. Some are now selected and some thrown out, till at length the grammar of the language has become fixed. Beyond this point, the vocabulary can again increase, and even more rapidly than at first, a place being ready for every new word on condition that it conforms to certain rules; but there is no more advance in fundamentals. So it is not merely with language but with every social institution and with every science and art. The term of all logical conflict is pacification and unity, a common faith in a common ideal.

Imitation under extra-logical influences also takes place according to assignable laws. Its movement is always from within outwards, and from the superior, whether person, locality, or class, to the inferior. Further, in any given society imitation either follows by preference the example of ancestors, or by preference takes up innovations, especially those initiated outside the particular social group. That is to say, it assumes the form either of "custom" or of "fashion". By the law of movement from within outwards is meant that belief determines action, and not action belief. Beliefs and desires, not their external expressions, are the substance and force of what is imitated. Imitation of externals is the result of a desire to resemble internally the models that are followed. In the statement of the second law we are to understand by "superior" the recognised superior. Although there is a certain reaction from the inferior to the superior, imitation always spreads from the social summits.

And when old inequalities disappear new ones appear; so that there are always points from which imitation can proceed. At the present time, indeed, it proceeds more rapidly than ever. The recognised superiors at any particular time are those who show themselves most able to understand the discoveries and to take advantage of the inventions already made. The third law of extra-logical imitation does not apply, as the two first do, to all the imitations within any society (the logical motives being supposed equal). Custom, or imitation of ancestral examples, always preponderates over "fashion" on the whole; but there is a certain range for variation, and within this range, according to the society or period, either of the two forms may rule. In all societies imitation takes the form of custom before it takes that of fashion. A social group need not pass from the first stage to the second; but wherever there is transition the order of succession is invariable. Fashion is uniform and unstable; custom multiform and stable. During the Middle Ages, for example, when (in everything but some main points, such as religion) custom ruled throughout Europe, the particular usages varied from country to country and from province to province. On the other hand, they were fixed in time. Precisely the same usages might be found at the same spot after the lapse of a century. In an age of fashion, such as the present, the usages, in those departments of life, for example, to which "the great industry" appeals, are the same all over Europe at the same moment. Ten years later they have changed but are equally uniform. Will this instability continue for ever? M. Tarde's conclusion is that it will not. At the end of the long series of alternations of custom and fashion, there will be a final movement of concentration, and custom will rule universally. The results of the diffusion of innovations by fashion will themselves have assumed the "customary" form; but with the restored stability of custom there will be combined the acquired uniformity of fashion. Civilisation of the European type, having conquered all the others, will have become absolutely fixed, like those that have preceded it.

"Fashion," as M. Tarde understands it, is simply the extension of the relation between different classes in the same society, beyond the bounds of particular States. At certain epochs, the foreign usage has the kind of *prestige* that belongs to the usage of a superior class. Setting out from Mr. Spencer's antithesis of military and industrial societies, M. Tarde brings this into comparison with Tocqueville's antithesis of aristocratic and democratic societies, and finally proposes to substitute for both that of societies of predominant custom and of predominant fashion. This last antithesis, he finds, can really be made the ground for a connected set of generalisations, as the former two cannot. What is aimed at by Tocqueville and by Mr. Spencer alike is to seize upon the causal element of the social transformation going on in our own period. Two types of society are imagined, one of which has for its determining ground to be industrial or democratic,

the other, to be military or aristocratic. The type of society that Mr. Spencer has in view when he speaks of militarism, Tocqueville has in view when he speaks of aristocracy, and similarly with the antithetical terms. The industrial or democratic type of society, both thinkers hold, is destined in the future to triumph over the opposite type. Neither antithesis, however, really describes the fundamental contrast of older European society, with the society that is tending to be. The causal element of the modern social transformation is that where the past was formerly imitated men now take example from the present. For the fascination of distance in time is substituted the fascination of distance in space. Instead of ancestors, innovating contemporaries are followed. The industrial as opposed to the military organisation of society, M. Tarde does not find to be everywhere, or to be necessarily favourable to individual independence. On the other hand, he accepts Tocqueville's conclusions as to the differences between aristocratic and democratic societies, if for aristocratic we read "ruled by ancestral custom," and for democratic "ruled by contemporary fashion". He finds in Tocqueville's attitude, however, a certain inconsistency. Though favourable on the whole to the "democratic" state of society in which social uniformity is brought about by the gradual diffusion of innovations, Tocqueville, as M. Tarde points out, in the end admits that its tendency is "authoritative," while the "aristocratic" state of society, or the society ruled by custom, is comparatively "liberal"; and yet Tocqueville cared more for liberty than for equality. It is curious that there is in M. Tarde's attitude precisely the same inconsistency. As a general rule he ascribes a liberalising and rationalising influence to "fashion". Yet in the end he finds that the tendency of fashion is to be more tyrannical than custom. This inconsistency of course does not overthrow M. Tarde's historical generalisations, for he does not make the connexion of fashion with freedom any part of these. Its effect is simply to emphasise his own distinction between the logical and extra-logical factors of the social movement. Innovation of a more or less cosmopolitan kind has no doubt for a long time been a liberalising influence in Europe. But, as M. Tarde occasionally recognises, it has not invariably been so, and it is not necessarily so. A Medising Greek, for example, or an Ultramontane, would have to be placed among the partisans of "extra-national fashion". M. Tarde himself gives some illustrations that might be added to these, and that effectively dissociate the "extra-logical" preference to follow fashion or custom from the logical choice of liberty or its opposite.

The true "social question" of the present time, M. Tarde says in one place, is whether European civilisation shall arrive at its definitive type by discussion and criticism or by the unlimited expansion of some new social authority. The solution, he says, cannot yet be foreseen; but his desires appear to be on one side and his expectations on the other. For while he regards it as

certain that, the future order once consummated, belief will again become "intense and intolerant," that a cosmopolitan and authoritative religion (founded on science) will rule over all minds and wills, he expresses the hope that the solution may be long deferred, that our "priceless intellectual anarchy" may remain to us as long as possible. From different chapters a sufficiently clear idea may be gained as to what the future order, in M. Tarde's view, is likely to be. Again and again he returns to the examples of China and the Byzantine Empire as illustrating the inevitable term of all civilisations. Divergent in everything that does not depend on physical and vital causes—for social progress, apart from conquest of one civilisation by another, moves not to a single end, but to many—these two completed social types are alike characterised by the fixation of highly complex customs regulating the whole of life and art. So we may expect it to be with modern European civilisation. A period of temporary mobility, such as was doubtless traversed by all the Asiatic civilisations, such as we know that Græco-Roman civilisation passed through, only prepares for the uniformity of the terminal fixation. Liberty is only a "passage between two disciplines". The idea of "equality before the law," with other juridical ideas of the kind, is destined to become a mere memory in the European consciousness. There are signs that the independent search for truth will be sacrificed to the social need for some consoling illusion. Future society will probably be strongly hierarchical, in spite of (or perhaps because of) the diffusion of the same ideas and needs through its whole mass. By progressive mixture of customs following upon their extra-national dissemination in the shape of fashion, uniformity will, without any political union, be established perhaps over the whole earth. The universal establishment of a single political organisation is also possible, though there are powerful causes that may prevent this. What we may hope for and foresee, is that individuality will show itself ineffaceable in the end, and will emerge from the society of the future with new and finer shades of difference in the form of the æsthetic life.

Others have desired or feared a new Middle Age of this kind. If we allow the chance of its appearance, we must, of course, agree with M. Tarde in the hope that its advent will be deferred as long as possible. Is "intellectual anarchy" our only security against it, or is there some deeper ground of hope that something quite different may arrive? It seems to me that M. Tarde himself supplies us with a reason for expecting a different state of things. Our strongest security against a new epoch of authoritative social compression lies not so much in the persistence of disagreements as in a certain approximation to agreement. Societies, as M. Tarde admirably explains, always after a time of conflict arrive at the fixation of their "grammar". What if the ethical and political "grammar" of modern Europe were to consist precisely of those maxims that are required for the permanent establishment of a state of freedom? It is not necessary that there

should be agreement as to the philosophical grounds of the maxims—as to whether, for example, the basis of the idea of justice is experiential or purely rational. All that is necessary is that the practical principles should be determinate and such as to gain general assent. In intellectual matters is there not already an approximation to this? If we suppose the liberty of criticism and discussion recognised as a principle and victorious in any conflict that it may have to enter upon, then by our very supposition we exclude the type of "customary" civilisation imagined by M. Tarde. Under the perpetual action of unfettered criticism no system of minute and tyrannical custom could maintain itself. Fixity of the ideal, given the disposition to use reason constantly in order to determine action, would of itself exclude fixity of usage; for it cannot be supposed that external circumstances will cease to change, and if they change, then, the ideal remaining the same, human action must vary. The last result conceivable becomes—to make use of a physical metaphor—a moving as distinguished from a stable equilibrium. To say this is even perhaps to concede too much to the idea of a fixed term; for, as M. Tarde has shown, accumulation of discoveries and inventions can go on indefinitely after principles are fixed. This accumulation does not of itself constitute the ideal; but there is an ideal in relation to which it has value; and this ideal is one which, conceived by earlier antiquity, did *not* find its fulfilment in the Byzantine Empire. That M. Tarde's own expectations are not so pessimistic as we might fancy is perhaps to be inferred from a passage where he suggests that "the ideal of the future" is a modification and expansion of "the ancient city".

THOMAS WHITTAKER.

Das Problem der Materie in der griechischen Philosophie. Eine historisch-kritisch Untersuchung von CLEMENS BÆUMKER. Münster: Aschendorffsche Buchhandlung, 1890. Pp. xv. 436.

It was once, and perhaps still is a widely entertained belief that the history of philosophy moves in a circle, that from the dawn of speculation down to the present day the same nugatory or unintelligible solutions have been offered to the same inexplicable problems. The learned and laborious essay of Herr Bæumker affords a good opportunity for testing the justice of this assumption so far as regards one particular line of inquiry. During its first or physical period, theories about the nature of matter constituted the very substance of Greek philosophy; the great systematising thinkers gave it a large place in their teaching; and down to the last nearly every innovator or reformer had a word to say on the same subject. Their various conclusions are collected and arranged in the present volume with some account of the processes by which they were probably obtained, and brief but suggestive references to the modern

theories of matter and force. If the author has little to tell us that is new on so well-worn a theme, he may be allowed the merit of exhibiting with clearness the assured results of scholarship. While making, of course, a first-hand study of the original texts, he has evidently worked throughout under the guidance of Zeller, occasionally controverting but more often confirming the interpretation of that sagacious critic, and in one important instance—that of Plato's theory of matter—victoriously upholding it against a swarm of assailants.

It is quite certain that the Greeks, or rather two or three of them, at a comparatively early period of speculation enunciated with all desirable clearness two principles of the highest importance—one, that the quantity of matter in the universe always remains constant, the other, that matter is composed of atoms. It is also certain that the Epicurean school, and it alone, had the merit of preserving these two principles and handing them down to modern physicists, who otherwise might have waited long enough before making these discoveries for themselves. It has been objected that the early philosophers only guessed at these principles, that they were only right by accident, which, for scientific purposes, is just as bad as to be wrong. The answer is twofold: ingenious guesses are an indispensable condition of scientific progress; and the atomic theory, even in the hands of its originators, was something more than a guess, it was the very best explanation that could be offered of the phenomena then accessible. That it was derived from eastern sources is a notion which receives no countenance from Herr Bæumker; nor does he attach any importance to the doubts recently thrown on the existence of Leucippus (p. 79)—possibly in the interest of such a derivation. On the other hand, modern research, while it can only add to the glory of the Atomists, somewhat detracts from the extravagant estimate once formed of their predecessors, Heracleitus and Parmenides. The former has sometimes been credited with the whole Hegelian philosophy—thanks partly to the acknowledgments of Hegel himself. Zeller has already done much to dissipate this pretension by setting the *aperçus* of the great Ephesian in their true light as mere physical observations, valuable only as a "moment" in early Greek speculation. Our author goes still further than Zeller, and with great plausibility explains the Heracleitean "identity of opposites" to mean no more than that the same thing or process exhibits different qualities in relation to different objects, as when we say that one man's meat is another man's poison; or again in passing through various stages of evolution, as when life and death spring from one another; or finally when opposite factors contribute towards a single result, such as the production of a new being by the union of the sexes. Parmenides, whom the author places after Heracleitus, has also been claimed as a precursor of Hegel on the strength of a saying supposed to mean that thought and being are the same. But the right interpretation (p. 53) is that

thought is *a* being—a part of existence. Herr Bæumker sees very clearly how much the Parmenidean account of absolute Being owes to reminiscences of perceptual extension. He might, I think, with advantage have gone still further and admitted that there is no *a priori* reasoning from the abstract notion of existence at all in the Eleatic system, that Parmenides consciously identifies absolute Being with space. Every stroke of his analysis applies to space, except when he declares it to be limited in extent; and as for that, we must remember that Aristotle also denied the infinity of space. If this interpretation be correct, we can see at once how the Being of Parmenides was constructed by fusing together the Limit and the Unlimited which the Pythagorean school had just before set in hostile antithesis to one another (p. 44); while *their* cosmology was evolved by a reverse process of analysis and differentiation from the confused homogeneous Infinite of Anaximander.

It has been held by Zeller and others that the systems of Empedocles, Anaxagoras, and the Atomists, were so many attempts to mediate between Parmenides and Heracleitus, to reconcile the immovable indivisible Being of the one with the perpetual flux of the other. This, according to our author, is a mistake. He holds that the thought of such a synthesis first occurred to Plato; while the course of physical speculation subsequent to the Eleatic school has its philosophical source in Parmenides alone, whose teaching it strives to reconcile with the common opinions of mankind. It seems to me, however, most unlikely that the ideas of a Heracleitus should exercise no influence on thinkers who stood so near to him in time; while his influence, if it told at all, must have told in the direction contended for, and told more effectually than the "common sense" which men like Empedocles and Anaxagoras regarded with such sovereign contempt. Besides we have in the Sphairos of Empedocles a conception not referable to any popular opinion, but directly traceable to the Heracleitean doctrine that all things were periodically swallowed up in fire.

In the course of his exposition Herr Bæumker is careful to point out that nothing like the subjective idealism of the moderns was dreamed of by the early Greek philosophers. Both with them and their successors a directly opposite tendency prevailed, which was to objectify intellectual abstractions, as we see in the Pythagorean construction of matter out of numbers and mathematical figures. Perhaps he hardly does justice to the germs of idealism discoverable in the theory of knowledge held by Protagoras, or, according to his view, by the disciples of Protagoras, as expounded in the *Theætetus* of Plato; in the nihilism of Gorgias; and in the remarkable contention of the Cyrenaics that nothing can be known to us but our own mental affections. As regards the Sophists generally, his standpoint is thoroughly antediluvian: he talks (p. 96) as if they were one and all disbelievers in any objective reality or standard of truth; as if it was they and

not Socrates who broke up the early methods of philosophising; as if (p. 110) the inductive definitions of Socrates were set up in opposition to their destructive scepticism. It seems to be not yet understood in Germany that two out of the only four Sophists about whom we know anything, Hippias and Prodicus, were firm believers in natural science and in a moral law of nature; and that it was just with these two that the historical Socrates came into contact, not with Gorgias and Protagoras, whom Xenophon does not even mention.

The section on Plato's theory of matter seems to me the soundest and most valuable portion of the work. A thorough rediscussion of the whole subject goes, as I have already intimated, to confirm Zeller's opinion that the matter of the *Timæus*, the eternal passive recipient of eternal active ideas is neither more nor less than void infinite space. But why Plato should associate necessary causation with matter understood as mere extension is not made clear. One might have expected that he of all men would have seen in the geometrical and mechanical properties of matter an ideal element communicated to it by the Good, rather than inherent attributes made subservient to the purposes of the Good. Historically, however, the association is of great interest, as it probably suggested—whether directly or indirectly—Spinoza's curious identification of extension with mechanical causation.

By thinking away every attribute of body except the one which is most constant we arrive at the Platonic notion of matter as pure space. By thinking away that one we obtain the Aristotelian notion of matter as pure potentiality. This seems a more natural explanation than the ingenious distinction of Herr Bæumker that Aristotle was governed by the idea of evolution, Plato by that of plastic or imitative art (p. 185). Here at least the disciple merely pushed the master's principles a little further, but with the not uncommon result of swinging them round to the opposite pole. The void extension which Plato took to be the essence of matter could be perfectly well imagined as existing apart from the ideas impressed on or reflected from its surface, and therefore the ideas on their side were left free to exist apart from *it*: the Aristotelian matter is the unknown and unknowable something in which the sensible qualities of objects inhere, and which, having no separate existence, can only be conceived as existing at all by an effort of abstraction; what it eminently represents is the element of motion and mutability in concrete objects, their capacity for coming into existence and passing out of it again. Now to postulate a material substance as the sufficient reason, the objective correlate of this variableness in the things of experience, though due, as our author rightly observes, to the Platonic habit of realising abstract conceptions as entities apart from the mind, eventually proved more favourable to a directly opposite interpretation of nature. As matter could not be isolated from form, so neither could form —except in the solitary instance of the supreme self-thinking

thought—be isolated from matter. What is more, the two were now explained to be merely different phases of one process related to one another as potential energy and actualised power. Herr Bæumker has, of course, given these points a place in his exposition; but I do not think that he has presented them in the right perspective: he does not show how near Aristotle came to substituting for the dualism of his master a purely monistic system.

There is, perhaps, no topic in Greek philosophy which less admits of being treated with novelty, if it is also to be treated with accuracy, than the physics of Epicurus. Here our author does little more than reproduce the depreciatory estimate of Zeller. Yet he does not entirely avoid the danger of reading modern conceptions into a system which lagged far behind the best science of its own time. The ceaseless motion attributed by Epicurus to his atoms was an illegitimate generalisation from the observed falling of unsupported bodies, not what we find it called here (p. 319), a crude outline of the doctrine of the conservation of force. Had the Epicureans grasped such a conception as the derivation of all movements of masses through space from the vibratory movements of atoms or molecules, they would have anticipated, not modern physics as now constituted, but the goal towards which science is slowly advancing, the reduction of potential to kinetic energy. The modern theory of force as still taught is in truth more nearly akin to the Aristotelian than to the Epicurean physics. The author seems also on a false scent when he discovers the modern antithesis between force and matter in the physics of Stoicism. The Stoics, on his own showing, merely distinguished between active and passive modes of matter, a notion than which nothing can be more alien to the modern mind.

It was, perhaps, in dealing with the notion of matter that the Neo-Platonists displayed most originality. Instead of regarding it, like Plato and Aristotle, as something co-ordinate with spirit, they deduced it either as an ultimate or an immediate emanation from the supreme creative power. Here, if anywhere, one might have expected that subjective idealism would make its appearance. But Greek philosophy maintained its objective character to the last. Sensuous appearances were, indeed, explained as a reflexion of ideas, but it was a reflexion from something that lay altogether outside mind (pp. 403 and 424). The author, following Zeller, draws a sharp distinction between the theories of the origin of matter held respectively by Plotinus and by Proclus. According to the former it is the last product in a series of descending emanations; according to the latter it proceeds from a formless infinitude, which has its place in the first intelligible triad, and emanates directly from the One (p. 424). But I think that a careful examination of the Fourth Book of the Second Ennead, especially Chapters 5 and 15, will show that it contains something more than a hint or germ of the theory developed by Proclus.

ALFRED W. BENN.

VIII—NEW BOOKS.

[*These Notes (by various hands) do not exclude Critical Notices later on.*]

On Right and Wrong. By WILLIAM SAMUEL LILLY. London: Chapman & Hall, 1890. Pp. xxx., 284.

The high title of this volume covers up a few magazine-articles linked together (more or less) by some other pieces that might well have also had their fair chance of effect in prior magazine-publication. Mr. Lilly's piquant style, magisterial tone, and on the whole not badly sustained pretension to universal information make of him as serviceable a 'philosopher' as monthly-review editor could desire to have at hand for occasional elevation (or submergence) of the 'general reader'. It is when Mr. Lilly proceeds to gather up his spent shafts and labours to persuade others as well as himself that he is doing a serious work for his generation,—it is then that his powers begin to appear less imposing. Though he professes here to write only, in a practical way, for the common man, he takes care to hint what else he has it in him to have done but for the fact that "a class of readers trained in philosophy can hardly be said to exist in England". That puts one upon looking to see what indications Mr. Lilly has not been able to suppress of his own philosophical attainment. As far as appears—beyond some references to S. Thomas and Aristotle, which may mean little enough—it is upon a certain acquaintance with Kant that he stakes his superior credit in this age of philosophical decay. It might even be called reliance upon Kant,—and the fact in itself is not without interest, to see a Catholic champion (even when not professing to be such) break away, to any extent, from his Church's tradition of distrust or hostility in Kant's regard. But why, then, even in writing only for "intelligent and thoughtful men of the world," send a shiver through any moderately-informed Kantian that might be found among them by such loose talk about "intuitive conceptions of the mind" as closes the paragraph on p. 96? Or what are we to think of a philosophical writer who, wanting to separate his "Transcendentalism" from the two-substance theory of mind and matter, can gravely quote, as if it had either novelty or pertinence, some former declaration of his own, that "the old wall of partition between spirit and matter is cracking in all directions" and that "we shall come to recognise a thinking substance of which thought is the foundation, not the resultant"? This last remark must, in the connexion (p. 63), be supposed to be meant as pointed against the thinking substance of Cartesian dualism! But, perhaps, nothing very particular was meant, to judge by the series of skips from one thing to anything else which Mr. Lilly goes on to perform in the next sentences. By way of information, we have the industrious Dr. Büchner put forward as an intellectual portent of the time, on the strength of an opinion expressed about him by M. Paul Janet which one remembers reading in the *Rev. des deux Mondes* a good twenty-five years ago. Then, after some other curious observations, all his own, upon the present state of the German mind, Mr. Lilly gives us this upon France:—"At the present moment the most widely influential school is unquestionably the medico-atheistic: the school which inculcates sensism of the grossest kind, which reeks of the brothel and the torture-

trough" (p. 19). It is vehemently said; and one is interested to know, exactly, of whom. Two sentences later, Mr. Lilly, having already forgotten all about his former "unquestionably," is not less confident with this other—"Unquestionably, the two greatest intellectual forces in France at the present time are M. Renan and M. Taine". It seems a considerable liberty to take with any class of readers; and till Mr. Lilly can learn to splash about a little less wildly altogether, it is impossible to take him seriously. Not but that his authorities, when at times he gives his mind to them, furnish him with considerations which the English writers (of various degrees of philosophical importance) against whom he tilts would have done well to pass over less lightly. But it needs a more coherent and sober reasoner than Mr. Lilly either to make the considerations now tell upon the writers who have not sufficiently regarded them or to give them force with readers who may else be led astray. On the whole, he may be advised not again to make his occupation with philosophical questions a reason for not giving to his friend, the editor of *The English Historical Review*, the benefit of his more serious studies (*vide* expansive Dedication of the volume).

Locke. By ALEXANDER CAMPBELL FRASER. Professor of Logic and Metaphysics, University of Edinburgh. ("Philosophical Classics for English Readers.") Edinburgh and London: W. Blackwood & Sons, 1890. Pp. x., 299.

The series of "Philosophical Classics" resumes with this volume the old and better scheme of treatment departed from, without any sufficient reason, in the different ways of the *Spinoza* and the *Bacon*. Prof. Fraser, having long intended and prepared to do for Locke's chief work what he so effectively accomplished for the works of Berkeley, now resigns the project and offers the present volume as a help towards the more extensive task of making fitting collection of the whole of Locke's works which he commends to some other philosophic scholar. The volume appears the more impressively in 1890, just two hundred years after the first publication of the famous and undying *Essay*, and it does, in the main, excellently fulfil its author's purpose. With free reference to the large mass of unpublished *Lockeana*, Prof. Fraser gives a more vivid picture than has yet been presented of the sagacious man's varied activity through life; and the account of the philosophy of the *Essay*, in something more than one hundred pages (pp. 104-212), is the most comprehensive and best-considered to which either student or common reader can now turn. Perhaps, on another occasion, some remark may be offered on various points in Prof. Fraser's interpretation, as also on certain special aspects of Locke's work which, with all his comprehensiveness, Prof. Fraser has hardly brought into the prominence they deserve. His newer materials might have been usefully and interestingly added to from the bodies of correspondence, bearing on Leibniz's effort to get into close relation with Locke, which have now been made public by Gerhardt in vol. vi. of his collected edition of the German philosopher's writings (see MIND xiii., 312); though nothing could be more significant of the older man's foreclosed state of mind than the slighting remark which Prof. Fraser does quote (p. 248) from a letter to Molyneux. [Some slips need correcting here and there. Hobbes's *Human Nature*, though it may be referred to either 1640 or 1650, can in no case be dated "1642"; nor is it rightly suggested thereupon (p. 12) that Gassendi's works on Epicurus followed the *Leviathan* of 1651. And surely it was not "at" (p. 18), but rather *from*, Oxford that the Royal Society got incorporation in 1661.]

Pure Logic and other Minor Works. By W. STANLEY JEVONS. Edited by ROBERT ADAMSON, Professor of Logic at Owens College, Manchester, and HARRIET A. JEVONS. With a Preface by Professor ADAMSON. London: Macmillan & Co., 1890. Pp. xxiii., 299.

A welcome collection of Jevons's earlier logical writings (1864-70), with a reprint of the series of papers which he had begun to issue before his untimely death under the general title of "John Stuart Mill's Philosophy tested". To these last (four in number) is added one small fragment "On the Method of Difference". Something was said here at the time (MIND iii. 141, 287) on the polemical enterprise to which Jevons had committed himself with such ardour in his last years. Prof. Adamson, in his present preface, deals very acutely with the deep-lying difference that parted Jevons and Mill, under a superficial appearance of agreement as experientialists. His observations give occasion for return to the subject in a future No.

The Seat of Authority in Religion. By JAMES MARTINEAU. London: Longmans, Green & Co., 1890. Pp. xi., 664.

This work, now completing an earlier enterprise (1872-5) of serial publication designed "to present a compendious survey of the ground both of Natural and Historical religion as accepted in Christendom," lies outside the philosophical construction reared in *Types of Ethical Theory* and *A Study of Religion*, but yet gives the author in bk. i., "Authority implied in Religion," an opportunity of developing again, with persuasive eloquence, some of his most characteristic philosophical views. The other books are occupied with "Authority artificially misplaced" (in Catholic Church or Protestant Guide in Scripture), "Divine Authority mixed with Human things," "Severance of Undivine Elements from Christendom," and "The Divine in the Human".

The Anatomy of the Central Nervous System in Health and in Disease. By Dr. HEINRICH OBERSTEINER, Prof. (ext) at the University of Vienna. Translated with annotations and additions by ALEXANDER HILL, M.D., &c., Master of Downing College, Cambridge. With 195 Illustrations. London: Charles Griffin & Co., 1890. Pp. xix., 432.

This work is specially commended to all students of mental science who wish to refer to the fullest and most accurate exposition now attainable of the results of anatomical inquiry into the central nervous system. The illustrative figures are of particular excellence; those of cross-sections being given in a way—one half filled-in, the other half in outline—which is admirably instructive. And here the translation is done by one who is himself a master of anatomy, able not only to follow his author but also to supplement him with results of independent research. Dr. Hill's additions, while duly marked off as his own, add materially to the value of the original: they are governed by that new and striking conception of his as to the plan of the nervous system noted in MIND x. 612. A Glossarial Index, giving the current English (or Latin) equivalents for German anatomical terms, with the French equivalents also in many cases, will be found of special use for purposes of reference.

A Textbook of Mental Diseases, with special reference to the Pathological Aspects of Insanity. By W. BEVAN LEWIS, Medical Director, West Riding Asylum, &c. With Illustrations in the text, Charts and 18 Lithographed Plates. London: C. Griffin & Co., 1889. Pp. xxii., 552.

The characteristic feature of this work is, without neglect of the

clinical aspects of insanity, to give much more prominence than has been usual to questions of anatomical basis and also to exhibit the course of pathological change (as far as it can be traced) in the implicated parts of the cerebro-spinal system. Pt. i. (pp. 1—114), "Anatomical and Histological," gives, accordingly, an elaborate and comprehensive view of the whole central system; while pt. iii. (pp. 432—541), "Pathological," breaks much new ground in regard to the nature and development of the morbid processes that show themselves in the multiform kinds of mental alienation, described at length in pt. ii. The work, all through, is the outcome of original observation and research—not a reproduction of other men's results.

The Criminal. By HAVELOCK ELLIS. Illustrated. ("The Contemporary Science Series.") London: Walter Scott, 1890. Pp. viii., 337.

An account of the results obtained by the new school of "criminal anthropology," founded in Italy. The chapters of the book are: i. "Introduction"; ii., "The Study of the Criminal"; iii., "Criminal Anthropology (Physical)"; iv., "Criminal Anthropology (Psychical)"; v., "The Results of Criminal Anthropology"; vi., "The Treatment of the Criminal"; vii., "Conclusions". There are several appendices, one of which (pp. 307—316) is a report of the Congress of Criminal Anthropology at Paris (1889). English readers may now get from this single volume information that has had to be sought in many foreign books and periodicals. The lines of investigation of the Italian school and the facts classified by Continental investigators are well and clearly set forth. Where the book is of less service is in its account of the general drift of the ideas of the school. If the author's own views were taken as representative it would even be somewhat misleading. The more influential thinkers of the new school would certainly not agree with him that there is henceforth to be no theory of "punishment" in the proper sense. "We cannot punish a monstrosity," the author says (p. 233), "for acting according to its monstrous nature". That is precisely what the leading writers of the school have set themselves to show that we can and ought to do. (See, upon Lombroso, Garofalo and others, MIND xiii. 450; and cp. p. 424 below.)

A Course of Lectures on the Growth and Means of Training the Mental Faculty. Delivered in the University of Cambridge. By FRANCIS WARNER, M.D., Lond., F.R.C.P., F.R.C.S., Eng., Physician to the London Hospital, &c. Cambridge: At the University Press, 1890. Pp. ix., 222.

The Teachers who have listened to the "Course of Lectures" here published are hardly to be congratulated. The one distinctive, if not particularly valuable, idea of the book is that of making the study of plant-life immediately preliminary to the study of expressions of mind in children. In the author's work on *Physical Expression* contributed to the International Scientific Series (see MIND x. 465), this mode of study was already advocated. The results attained were not very noteworthy, but at any rate the book only professed to deal with *physical* expression. The author now leads us to expect that he will deal with *mental* faculty, and then proceeds to deny the application of the term "mental" to anything beyond the physical states of organisms. "The term Psychosis," he says, "is here used to express the physical processes occurring in the brain which are connected with the action of mind. . . . The study of mental action thus becomes a study of physical facts, as is the study of any other subject in physiology, or

the study of the phenomena of light, electricity or sound" (p. 37). At p. 39 he speaks of "the physical action called 'thought'". Perhaps a sentence from p. 40 may make Dr. Warner's own "thought" more intelligible. "The expression of a thought consists in the motor action of a group of cells, the thought (act of psychosis) consists in the formation of the union of cells whose motor or efferent action produces expression of the thought." What, again, is meant when, in a paragraph on "Logic" at p. 15, it is said that "the sequence of a phenomenon can never be a part of its causation"? And is this made clearer by the sentence that follows? "It is doubtless true that logic should guide our observations and arguments, but, in some cases, observation, especially as to the time of events, may help to correct our logic." Coming to Dr. Warner's study of children we meet with oracular sayings such as these:—"The outcome of impressions produced after birth is called intelligence" (p. 50). "The most important condition of a child's brain is that indicated by the signs of *consciousness*" (p. 72). "The condition of activity is indicated by actions, *i.e.*, movements" (p. 79). "In truth you must avoid metaphysical descriptions in scientific work" (p. 88). Is the statement that "activity is indicated by actions" science, or a caricature of "metaphysics"?

The Faith of a Realist. By JAMES COPNER, M.A., &c. London and Edinburgh: Williams & Norgate, 1890. Pp. 351.

The aim of this book is to work towards an ideal of a "philosophical religion"—that is, of "a religion which shall commend itself as rational to men of science and philosophy, and shall be capable also of being accepted as true by the generality of men". It is everywhere liberal and philosophical in spirit. The title is taken from chapter i. ("Philosophical Realism"), in which the author contends for a distinction between "phenomena," regarded as non-causal in the philosophical sense, and "noümena," which are causal and the objects of philosophy. Chapter ii. ("The Relation of Philosophy to Science") sets forth a view of science as the basis of philosophy but not its substance. The remaining chapters ("God and Providence," "Good in Things Evil," "The Reign of Law," "The Divine Attributes," "*De Animâ*," "Philosophical Religion") all contain noteworthy points. The author's doctrine of Providence, for example, has independent philosophical interest. In the course of his exposition of it he defends determinism as leaving "moral freedom and moral responsibility entirely intact". "Creation," philosophically viewed, he regards as consisting in a "providential evolution"—or, in other words, "a God-directed origination of things from things previously existing". The distinction between "personal continuity" and "personal identity" is discussed in a suggestive way; the conclusion drawn being that "man has not personal identity, but personal continuity". The soul, like the organism, has been evolved. It is not, however, a resultant of the organism, but is rather to be regarded as an internal and active "cause of organism". Thus viewed, it furnishes the basis for a theory of personal immortality as consisting not in any absolute sameness, psychical any more than physical, but in a development without loss of spiritual continuity.

Proceedings of the Aristotelian Society for the Systematic Study of Philosophy. Vol. I., No. 3, Part i. London: Williams and Norgate, 1890. Pp. 76.

This instalment of the Proceedings of the Aristotelian Society contains the Presidential Address for the Session 1889-90 ("What is Logic?"), a paper by Mr. Bosanquet on "The Æsthetic Theory of

Ugliness" (the result of which is that "true" as distinguished from "apparent" ugliness is "the positive contrary of the characteristic, *i.e.*, the partial taken as the characteristic") and a 'symposium' on the question "Is there Evidence of Design in Nature?" to which the contributors are the Rev. W. L. Gildea, Mr. S. Alexander, and Mr. Romanes. In his Presidential Address Mr. Hodgson contends for the limitation of the scope of Logic to the setting forth of the laws or forms of thought. "Logic," as he puts it, "is Thought engaged, not in following the Proteus-changes of Nature, but in watching its own steps in following them"; or, as he says in another place, "Logic contains the laws or forms of thought or reasoning in application to phenomena, the laws or forms in or under which we think, as distinguished from perceiving". It is thus not a "Method of Reasoning," such as are Induction and Deduction, but is "analytic simply". Theories of Logic that include more than laws or forms of thought are "empirical"; the two chief forms of "empiricism" at present being "the English and the Hegelian," of which the first errs by bringing within Logic the actual inductive process of the discovery of scientific truth, while the second errs by assigning creative activity to thought within the sphere of perception. The *crux* of Logic is the existence of reasoning which is at the same time "reasoning" and erroneous. Its solution is in the word "*tentative*". Reasoning consists of (1) an "act of attention," which marks the transition from perception to thought and gives the three logical "postulates" of Identity, Contradiction and Excluded Middle, and (2) a non-volitional content. The "spontaneous redintegration" of the content of consciousness supplies data to the choice that takes place in "tentative" reasoning. "Whenever the reasoning as a whole is erroneous, the error arises from the spontaneously supplied data, and not from the volitional action, which, as far as it is simply an application of the Postulates, is infallible. At the same time it is this latter part of the whole action in which its *differentia* as reasoning consists, and which gives the character of a reasoning to the whole."

The Wisdom of Life, being the First Part of Arthur Schopenhauer's *Aphorismen zur Lebensweisheit*. Translated with a Preface by T. Bailey Saunders, M.A. London: Swan Sonnenschein & Co., 1890. Pp. xxvi., 135.

Mr. Saunders here continues his translation of selections from Schopenhauer's minor works, which, as in the former volume (see Mind xiv. 596), is competent and agreeable to read. In his introduction he explains the scope of Schopenhauer's "Wisdom of Life" as a protest against the search for happiness in externals.

Insignia Vitæ, or Broad Principles and Practical Conclusions. Five Essays on Life and Character. By C. H. Waterhouse, B.A., M.D. London: J. S. Virtue & Co., 1890. Pp. xi., 295.

The subjects of these five essays are (1) Nature's Plan in the Life of Man, (2) Concerning the Real Self or "Ego" in Man, (3) On the Exercise of the Judgment, (4) Concerning the Genesis of Man, (5) On the Relation of the Sexes. The first two are the most distinctly philosophical, and it is in the second especially that the author's central thought is to be found. He has conceived very clearly and often very well expressed the idea of human nature as divided between a higher principle which forms man's "true self or Ego" and a "lower executive" that ought to be subservient to it but may escape from its control, and, in this case, may either submit to the direction of another will or itself get control over the true

Ego. In illustration of this conception good use is made of recent observations on hypnotised 'subjects,' on the phenomena of disaggregated personality, &c. The distinction is dwelt upon between "moral" or imperative and "natural" or scientific law; the latter being treated (not without an effort at reconciliation in the first essay) now as the obstacle and now as the condition of the former. A psychological point that is brought out in an interesting way (*e.g.*, p. 114) is the difference between "concentration" and "expansion" of mind—the first illustrated by the attitude of the mathematician, the second by the attitude of the poet—in both of which "the mind is deeply and powerfully engaged" but in two wholly different manners. The author's general conception of "the real self or Ego" is summed up in a sentence where he observes that "the subject of our scrutiny" is "not by any means conterminous with the totality of man's composite being; that many other items in life's count pose more conspicuously, strike the eye far more forcibly than the impalpable, viewless, intermittent and wavering force of the real self or Ego; yet not in those more showy and, to all appearance, more substantial belongings and trappings of personality shall a man, if he take himself to task, recognise the true law and *logos* of his being, but in the exercise—fitful though it be—of his conscience-guided will".

The World-Energy and its Self-Conservation. By WILLIAM M. BRYANT. Chicago: S. C. Griggs, & Co., 1890. Pp. xv., 304.

An effort to exhibit Hegelianism and modern physical science as opposite aspects of the same general truth. "The famous Hegelian dialectic is in truth nothing less or else than the speculative aspect of the doctrine of the Conservation of Energy, which constitutes the vital element of all that is known as 'Modern Science'. The former presents the principle of Evolution in its most abstract, but also in its most rigidly consistent form. The latter unfolds the 'dialectic' under the form of the necessary relations or laws that 'govern,' or rather constitute, natural (in the sense of physical) phenomena. Thus, instead of being contradictory the one of the other, these two great movements are in reality but complementary and increasingly adequate phases of the ceaseless struggle on the part of the human mind to bring itself into harmony with the actual world in its essential, and therefore ultimate, significance."

The Way out of Agnosticism, or the Philosophy of Free Religion. By FRANCIS ELLINGWOOD ABBOT, Ph.D., late Instructor in Philosophy in Harvard University. Boston: Little, Brown & Co., 1890. Pp. xi., 75.

Dr. Abbot propounds a theory of the universe which he defines as "Absolute Monism or Scientific Theism" and regards as the "necessary philosophical goal of the great movement of modern scientific thought". The general principles of his doctrine (for which see MIND vii. 461, also xi. 287, 409) are now expressed thus:—(1) "The universal results of the special sciences, including the method common to them all, are the only possible data of philosophy or universal science"; (2) "The universe is known as at once infinite machine, infinite organism and infinite person—as mechanical in its apparent form and action, organic in its essential constitution and personal in its innermost being: it is the eternally self-evolving and self-involving unity of the Absolute Real and the Absolute Ideal in God"; (3) "The universe itself, as eternally self-evolving and self-involving unity of the Absolute Real and the Absolute Ideal in God, is the ethical Realisation of the Infinite Divine Ideal, which reflects itself in the Finite Human Ideal as the sun reflects itself in the dew-drop;

and the splendour of its reflexion is proportioned to the intelligent, free, loyal and loving obedience of the human soul to it, as at once the supreme law of Human Nature and the supreme known law of Universal Nature".

Le Surmenage mental dans la Civilisation moderne. Effets—Causes—Remèdes. Par MARIE MANACÉINE, Membre Honoraire de la Société médicale de la Sibérie orientale, Membre Effectif du Comité d'Instruction et d'Education du Musée pédagogique de Saint Pétersbourg, etc., etc. Traduit du russe par E. JAUBERT. Avec une Préface par CHARLES RICHET, Professeur à la Faculté de Médecine de Paris. Paris: G. Masson, 1890. Pp. xiv., 286.

This book, by a Russian educationist, was well worth translating. Madame Manacéine's aim is first to describe and then to trace to its causes and suggest remedies for that increase of various forms of weakness and instability of the nervous system which is observed to accompany advancing civilisation. Among the causes are found increase of town life, the "over-pressure" and (still more) the monotony of the modern school, and generally all that contributes to what has been called "surmenage mental". To show the way in which this produces its effect, the author first dwells on the normal outcome of social and civilised life. The highest result of mental development, she contends, is "individualisation," the formation of a definite personal character. This is the result to be aimed at both by educators and by each person for himself. It can only be attained by a subordination of impulses to the "unity of the interior Ego". Physiologically it is expressed in subordination of the lower to the higher nervous centres. Every cause of "degenerescence and dissolution" begins by an attack on the higher co-ordinating nervous centres; and so it is with "surmenage mental". The physiological effect of this is accordingly "asthenia of the frontal lobes"—to the getting rid of which all efforts ought to be directed. Apart from remarks as to the care of physical health, the result is that educators, in particular, ought to avoid at once intellectual monotony and distraction, and ought to encourage activity of mind in their pupils as distinguished from mere receptivity, since activity promotes the co-ordination to be aimed at. A noteworthy application of the general idea is made in a passage extending over pp. 67-9. "The tendency of our epoch to consider all 'psychopaths' as irresponsible subjects ends in reality by depriving them of those vigorous springs which might aid them in their struggle against the morbid impulses of their unstable and pathological nervous system. In depriving them of those springs we contribute to their future degenerescence. Is that mode of action humane? Every criminal, every 'psychopath' preserves a certain particle of humanity, and the duty of the legislator as of the whole of society is to sustain and develop in him precisely that side of his nature . . . Severe penal measures, in such cases, will be more humanitarian, will do much less injury, than the sentimental doctrines of irresponsibility."

Rapports du Relatif et de l'Absolu. Par FÉLIX CELLARIER. Paris: F. Alcan, 1890. Pp. vi., 419.

This is a sequel to the author's *Etudes sur la Raison* (MIND xiv. 294) and is to be followed by another work. The main theoretical points now developed were already put in the earlier book. The keystone of his system, the author says, is "the unity of essence of all being". "Existence is different and distinct in all beings; essence, on the contrary,

is one and identical in all without exception." Knowledge of relative, contingent, finite beings implies that of absolute, necessary, infinite being.

Le Problème religieux au XIXe Siècle. Par J. E. ALAUX, Professeur de Faculté, Professeur de philosophie à l'Ecole des Lettres d'Alger. Précédé d'une Préface par JEAN PAUL CLARENS. Paris: F. Alcan, 1890. Pp. xii., 444.

This is in part a recast of two earlier works—*La Religion au XIXe Siècle* (1857) and *La Raison, Essai sur l'avenir de la Philosophie* (1860)—or rather of the first and one division of the second, the other division of which has become *L'Analyse métaphysique, Méthode pour constituer la Philosophie première* (1872); in part it consists of chapters not before published. The author holds Christianity in its Catholic form to be true as a doctrinal system, though not perhaps wholly true according to the ordinary conception of it as making infallible historical assertions. The Catholic doctrine, however, is in need of "philosophical reconstruction" as distinguished from bare "theological explanation". The problem attempted by the Alexandrian Fathers, and formulated by Anselm in the words taken as a motto for the present work—*Fides quærens intellectum*—must be attempted again in our own age. Nothing less than the transformation of faith into science by philosophy can solve the religious problem of the century. As a preliminary to this philosophical reconstruction, the individual reason must accept a "faith" on authority, but on no less an authority than that of "the human race," which holds as in deposit a knowledge of invisible things for the use of each of us. At the basis of all religions is found "religion"; and this for the author is identical with the essence of the Catholic creed. The genuinely "Catholic" religion of the whole of humanity can only have been communicated by an external revelation. It is a "faith" that "reason," or the individual intelligence, cannot reject without cutting itself off from the general or social intelligence. "Reason is the individual instrument, faith the social instrument of knowledge." Understanding is our work; faith is the work of God in us. "Religion, as doctrine, is no other than philosophy revealed to the human race before being understood by the individual; philosophy is no other than religion understood by the individual, who holds it from the human race, which holds it from God." By the search for a metaphysical hypothesis to be made the ground of the Catholic position as to individual destiny, the author arrives at his distinctive (monadological) view—partly developed in a little book noticed in MIND xiii. 615. The point of it in its application to Christian theology is a theory of the reincarnation of the souls of the reprobate.

L'Anthropologie criminelle et ses récents progrès. Par CESARE LOMBROSO, Professeur de psychiatrie et de médecine légale à l'Université de Turin. Avec 10 figures dans le texte. Paris: F. Alcan, 1890. Pp. 180.

In this little book Prof. Lombroso states briefly some of the positions of his larger work *L'Homme criminel* (see MIND xiii. 450), defends them against objections, and discusses the progress of "criminal anthropology" within recent years. First of all he makes a perfectly valid defence of his method of ascertaining the features of the criminal "type". The scientific constitution of anthropological types generally, as he shows, does not involve the presence of the "typical" features in all, or even in a majority, of persons of the class from which the type is constituted; and the criminal type is no exception to the rule. A rather

conspicuous weakness of the book, however, is the author's attempt to combine his own thesis as to the existence of a criminal type or types of *character* with the view that regards the extremer forms of criminality as resulting from mental disease. The genuinely new idea of Prof. Lombroso's school, as some of those who have been most influenced by his teaching have pointed out, is really incompatible with the position of the earlier medical theorists who used to speak of "moral insanity". Through the whole of the present book, except the first two chapters (on the anatomical and physiological anomalies of criminals), the mixture of incompatible doctrines may be detected. In view of the divergent practical consequences of the two theses, it is important to insist on this theoretical defect, which, it may be remarked, comes out more strongly in a book that is occupied with general principles than in one that is occupied with the detail of the subject.

Les Rêves. Physiologie et Pathologie. Par Le Dr. PH. TISSIÉ, Bibliothécaire universitaire à la Faculté de médecine de Bordeaux. Avec une Préface de M. le Professeur AZAM. Paris: F. Alcan, 1890. Pp. xii., 214.

This book contains an extensive collection of facts relating to the phenomena of dreaming; many of which are the result of original observations by the author, especially on one particular 'subject' who at frequent intervals falls into a state of "diurnal somnambulism". The facts as regards this 'subject' are given at most length in part ii. ("Influence of dreams on ideation and on the acts accomplished in the sleeping and waking states," pp. 113-175.) Part iii. (pp. 177-205) is a "*Résumé*"; part i. (pp. 5-111) attempts a general classification and theory of the phenomena. As a theoretical basis for his classification of dreams the author distinguishes between the "sensorial" and the "splanchnic" Ego. The first corresponds to the functions of the epidermic organs of sense and their nervous centres, the second to the functions of the internal organs (heart, lungs, &c.) and the nervous centres more directly influenced by them. The splanchnic Ego is always active, in sleep as in waking life; the sensorial Ego is "episodical," and in sleep is thrown out of equilibrium. "All combinations are possible between the substratum memories of the splanchnic Ego and the episodical memories of the sensorial Ego." The splanchnic Ego in sleep perceives modifications of organs and systems better than in the waking state, and sometimes reveals them in dreams. Sleep may be "physiological," "somnambulic" or "hypnotic". Associations of ideas, and relations of "suggestion" to act, the author finds, can be established in so many ways among the dreams belonging to these modes of sleep, and between dreams generally and the conscious states of waking life, that we are obliged to regard the difference between one kind of sleep and any other as only a difference of degree. The three modes of sleep in reality form a continuous series, in the order—physiological, somnambulic, hypnotic.

Gall et sa Doctrine. Justification des Principes fondamentaux de l'Organologie Cérébrale; suivie d'une Etude sur Amnésie, l'Aphémie et l'Aphasie et d'autres Propositions rélatives au Dédoublement fonctionnel du Cerveau et à l'Autopsychologie. Par Le Dr. F. NIVELET, Vice-président du conseil d' hygiène de l'arrondissement de Commercy, etc. Paris: F. Alcan, 1890. Pp. 278.

This book is, in its first part (pp. 6-128), an account of the general doctrine of Gall as to cerebral localisation. The second part (pp. 131-78) deals with the localisation of the power of articulate speech, with special

reference to Gall's doctrine. Part iii. (pp. 181-222), entitled "Autopsychology," describes some peculiarities of the writer's own memory—which is strong on the auditory and weak on the visual side. Part iv. (pp. 225-76) is a "Study on the duplication of voluntary motricity in correlation with the duplication of the cerebral hemispheres". The parts that deal with Gall are copiously illustrated by extracts from his work, and will be found specially interesting. Only the general doctrine, not the detailed distribution of 'faculties,' is gone into. The author's contention is that, since his own day, Gall has been unduly neglected by the scientific world. His particular mapping out of the organs of mind cannot, indeed, be upheld; but he was an initiator in the study of the brain in relation to psychology, and by his general teaching he helped to clear away many errors and prejudices.

La Théorie de la Grâce et la Liberté morale de l'Homme. Par E. JOYAU, Chargé de Cours à la Faculté des Lettres d'Aix, Ancien Elève de l'Ecole Normale. Paris: F. Alcan, 1889. Pp. 129.

An interesting and scholarly history of the principal phases of the Free-will controversy in its relation to the theological doctrine of Grace. The conflict between the doctrines of Grace and of Free-will the author regards as a conflict between what may be called "the Christian and the theological spirit". Christianity—with Judaism—supposes man free to obey or not to obey divine commands, and therefore responsible for his decision. On the other hand "the theological tradition," beginning with St. Paul, tends to the negation of human freedom. The theologians attempt to formulate consistently the mode of action of divine Grace, regarded as necessarily efficacious, and this leads inevitably to the denial of all initiative to man. Yet so energetic is the feeling that man has of his independence that the Catholic Church, which logically ought to have denied free-will, has made it a fundamental dogma; and theologians have exhausted their ingenuity in the effort to reconcile it with the doctrine of omnipotent grace. Among doctrines of liberty considered in themselves M. Joyau regards that of Malebranche (to whom he devotes his concluding section) as "one of the most exact and complete that the history of philosophy presents us with," but as quite irreconcilable with Malebranche's metaphysical doctrine, since that ascribes all real causation to divine action. Thus in seventeen centuries no advance was made towards a solution of the fundamental problem of Christian theology. This might have been foreseen. The doctrine of omnipotent divine grace can indeed—so long as it is regarded as a mystery—be held side by side with the belief in human free-will; but no philosophical reconciliation between them is possible.

L'Esthétique d'Aristote et de ses Successeurs. Par CH. BÉNARD, Ancien Professeur de philosophie dans les lycées de Paris et à l'Ecole normale supérieure. Paris: A. Picard; F. Alcan, 1889. Pp. 387.

M. Bénard, well known by former works on ancient as well as modern philosophy, has here written the history of Æsthetics in antiquity from Aristotle onwards. Part i. of his present work (pp. 1—157) treats of the æsthetics of Aristotle himself, under the heads of "The Beautiful," "Art," "Poetry," "Music: Dancing and theatrical action," "The Arts of design (Painting, Sculpture, Architecture)". Part ii. (pp. 159—369) traces the history of æsthetics after Aristotle, dealing in order with the Peripatetics, the Epicureans, the Stoics, the Sceptics, the Eclectics, the Rhetoricians (grammarians, historians of art, poets and artists), and the Alexandrians. A paper on "The Æsthetics of Aristotle and Contem-

porary Criticism," being a bibliographical and critical notice of writers who have treated of Aristotle's Æsthetics during the present century, is printed in smaller type, at the end of the volume. M. Bénard's general conclusion is that Aristotle marks the culminating point of ancient æsthetics. Although in the philosophical theory of beauty Aristotle did not go beyond Plato, he had the idea of a *science* of Æsthetics, founded on consideration of what had been actually achieved in the arts; and this kind of consideration Plato had wholly subordinated to metaphysical doctrine. Aristotle, however, did not constitute æsthetic science, nor was it constituted in antiquity. Perhaps, indeed, Æsthetics as a separate science is only now beginning to exist. The error of modern commentators, especially of the Germans, has been to read their own theories into Aristotle, ascribing to him views that he could not possibly have attained. It has therefore been the author's aim to set forth the doctrine of Aristotle as it actually was, with all its fragmentariness and with its occasional inconsistencies. Thus considered, he finds that, although it cannot on any legitimate system of interpretation be regarded as adequate to the whole of art, ancient and modern, it is yet of more than historical interest, and contains elements that are really of absolute value; some of its canons being not merely special rules applicable to art under ancient conditions, but, when rightly understood, canons applicable to all art.

L'Evolutionnisme des Idées-Forces. Par ALFRED FOUILLÉE. Paris: F. Alcan, 1890. Pp. xciv., 303.

"In this work the author sets forth the general principles of his philosophical doctrine. While accepting the theory of evolution in its general scope, he believes that it will have to be profoundly modified, and that factors of mental order must be added to the mechanical factors. He criticises the doctrines which regard facts of consciousness and ideas as mere passive *reflexions* of mechanism, and animals as '*conscious automata*'. The action of psychical phenomena, which, on their representative side, all involve ideas, their influence on evolution, their kind of efficiency and *force*—are what he has desired to bring to light under the general name of *idea-forces*. He shows the capital importance of this point of view in psychology, in cosmology, and in morality. To complete mechanical evolutionism by an evolutionism with a psychical spring is to render progress possible in the world, in place of a perpetual repetition, and thus to re-open the door to hope." Critical Notice will follow.

La Genèse de l'Idée de Temps. Par M. GUYAU. Avec une Introduction par ALFRED FOUILLÉE. Paris: F. Alcan, 1890. Pp. xxxvi., 142.

"This book is a contribution to the theory of evolution, which explains all our ideas by the slowly accumulated effects of individual and ancestral experience. But, at the same time, Guyau's study is an important modification of the evolutionist theory. In opposition to the opinions generally received in the evolutionist school, Guyau does not make the perception of extension depend on that of duration; he admits, if not the priority of the perception of extension, at least the primitive simultaneity of the two representations. After having studied what he calls the passive and statical form of the idea of time, he points out its active and dynamical foundation; he studies the part of will and of motor activity in the notion of time, the relations of time and memory, finally the illusions of time. The work is preceded by an extensive introduction in which M. Fouillée criticises the Kantian theory of time."

La Filosofia dell' Inconsciente metafisica e morale. Contributo alla Storia del Pessimismo. Per ADOLFO FAGGI. Firenze: Successori Le Monnier, 1890. Pp. 207.

A copious and appreciative exposition of Hartmann's metaphysical and moral philosophy—though not the exposition of a disciple. The author arrives at the view that the system of "evolutionary pessimism" is itself a necessary stage in the evolution of pessimistic thought, and that it is the last stage; being, indeed, a euthanasia, definitively closing "the grandiose epic of pain which has had so much part in the intellectual evolution of the Europe of the nineteenth century". A pessimistic doctrine of evolution is, in effect, when ethical application of it is attempted, self-contradictory. "The pessimist who dedicates himself to evolution must either renounce redemption, or must become an optimist and find his felicity in evolution itself." As for Hartmann's imagination of a "cosmic suicide" initiated by the human race, it is "perhaps the most Titanic, and at the same time the maddest dream that mind of philosopher could conceive".

Die Entwickelung des Causalproblems in der Philosophie seit Kant. Studien zur Orientirung über die Aufgaben der Metaphysik und Erkenntnisslehre. Zweiter Theil. Von Dr. EDMUND KOENIG. Leipzig: O. Wigand, 1890. Pp. xii., 488.

The author here completes his history of Theories of Cause, of which the first part, published at the end of 1888, was noted in MIND xiv. 154. The theories dealt with in the present volume are those of Maine de Biran, Schopenhauer, Trendelenburg, Herbart, Lotze, J. S. Mill, Laas, Goering, Spencer, Riehl, Hartmann, Volkelt, and Wundt. Finally there are chapters on "The Conception of Cause in the Natural Science of to-day" and "The Conception of Cause in the Psychology of to-day". Critical Notice of the work will follow.

Ueber die Abstraction. Von Dr. HANS SCHMIDKUNZ. Halle a. S.: C. E. M. Pfeffer (R. Stricker), 1889. Pp. 43.

Analytische und synthetische Phantasie. Von Dr. HANS SCHMIDKUNZ. Halle-Saale: C. E. M. Pfeffer (R. Stricker), 1889. Pp. vii., 103.

In the first of these pieces the author insists on the *positive* element in Abstraction. Mere "taking away," he shows, is not sufficient to constitute abstraction as a psychological process. There is also a "positing and new shaping," an "intensification" of one constituent of the total content of a phenomenon. 'Abstracts' and 'concretes' only differ in the degree to which this intensification takes place. The selected attribute in the case of the 'concrete' forms a weaker, in the case of the 'abstract' an intenser, constituent of our consciousness. Intensity of consciousness of the element positively attended to increases in proportion as consciousness is withdrawn from other elements. That is to say, it increases with the degree of abstraction.

The second piece is a study of the various forms of Phantasy or Imagination—both creative and merely receptive—according as they are "analytic" or "synthetic"; the distinction being that in synthesis the phantasy proceeds from "parts" to "whole," or from "question" to "answer," while in analysis it proceeds from whole to parts, or from answer back to question. The result is that the creative artist mostly works analytically, while the recipient first and most enjoys synthetically, but can afterwards proceed to an analysis and reconstruction resembling creation. It is only by having first a "whole" or an "answer" before

his mind that the artist can give to his work that appearance of absolutely necessary sequence from the data which constitutes the "*truth*" of art. To show us the motives in action is to create analytically. From the point of view of æsthetic value, therefore, analysis is in every way superior to synthesis.

Die Psychologie des Firmianus Lactantius. Ein Beitrag zur Geschichte der Psychologie von Dr. FRIEDRICH MARBACH, Diaconus in Neustadt a. d. Orla. Halle a. S.: C. E. M. Pfeffer (R. Stricker), 1889. Pp. 80.

A very good account of the psychological doctrines of Lactantius—who is studied monographically as a representative of Patristic philosophy before Augustine. The result of the whole is that the doctrine of the soul in the earlier Christian philosophy—and in Lactantius as representing this—is wholly dependent on ancient philosophy in detail, but is determined in its general character by the Christian view of the importance and ethical value of the individual soul; all elements of doctrine that conflict with this view being rejected, while those that can be assimilated by it are appropriated from every source. The distinctive turn was given to the new shaping of the theory of the soul by dualism together with an exclusively ethical direction of thought. Thus the opposition of soul and body became for Lactantius itself an ethical opposition; and this again determined his attitude to all psychological questions so far as they have ethical bearings. Those that have no obvious ethical bearings, the author shows, are hardly discussed; but, whenever he can, he brings out theoretical points that are of interest for the history of psychology. A point of special interest that he notes is the wavering of Lactantius on the question of the materiality or immateriality of the soul.

Die Physiologie der Tonkunst. Von Dr. EUGEN DREHER, weil. Docent an der Universität Halle. Halle-Saale, C.E.M. Pfeffer (R. Stricker), 1889. Pp. xi., 122.

An attempt to explain the distinctively æsthetic pleasure of music by "unconscious thought-activities". The pleasure taken in melody as in harmony, the author seeks to show, can only be due at bottom to an "unconscious mathematics". We ourselves—on suggestions given—put rhythm into the sounds that we hear. Our activity is unconscious—for our Ego—as in all sense-perception, and is essentially of the same kind as the intellectual element in perception generally. For physiological (or psychophysical) explanation we have to begin with harmony; melody being harmony developed in time: but it is essentially through melody that music becomes an art. To the detailed explanation of both alike, Helmholtz's researches contribute much, but they do not explain everything. Fuller explanation is got by a return to the theory of Euler—taken up by the author into his own explanation. Music, simply as such, Dr. Dreher goes on to contend, conveys definite ideas, which, in analogy with the hypothesis as to the production of simpler effects, may be viewed as the product of unconscious thinking.

Die Erkenntnisslehre der Stoiker. Von WERNER LUTHE. Leipzig: B. G. Teubner, 1890. Pp. 46.

An account of the Stoical Theory of Knowledge, following the authorities very closely and giving exact citations. The author concludes that in spite of its "sensualism" the theory of knowledge of the Stoics was "idealistic," since it is ruled by the thought that man can attain absolutely secure and perfect knowledge of things. This idealism in the

theory of knowledge is a result of the ethical "idealism" which, in spite of its theoretical materialism, was also a part of the Stoical doctrine. Man—or at least the sage—must be able to acquire perfect knowledge so that he may act—as it is supposed that he has the power to act—in accordance with the ethical ideal. Since the ethical doctrine of the Stoics was the result of a "subjective need," their theory of knowledge also may be said to have been determined by that need. It is at the same time "objective" in that it supposes certain representations to carry with them an infallible mark of truth.

Die Physiologie des Hasses. Von PAUL MANTEGAZZA, Professor der Anthropologie und Senator in Florenz. Einzig autorisirte deutsche Ausgabe. Aus dem Italienischen von R. TEUSCHER, Dr. med. Jena: H. Costenoble, [1890]. Pp. viii., 371.

Prof. Mantegazza's book on the *Physiology of Hate*, which is here very well translated, consists of lively description and acute analysis of the various phenomena—such as Cursing, Blood-revenge, Cannibalism, Duelling and War—that may be taken to be expressions of hatred between races or persons. The cause of hatred, in the author's view, is always pain in some form. The greater part of the contents of the book would, of course, be better described as Psychology than as Physiology; but, as in his work on Expression (see MIND No. 58, p. 289), there is to be noted the author's insistence on the scientific value of physiology and physiology alone for the study of man. In the last paragraph of the book, for example, "lens and scalpel," as the only proper means of investigation in "positive psychology," are placed in opposition to "theology and metaphysics".

Geschichte der Philosophie. Von Dr. W. WINDELBAND, Professor an der Universität Strassburg. Erste Lieferung. Freiburg i. B.: J. C. B. Mohr (Paul Siebeck), 1890. Pp. 128.

This is the first part (to be followed by two others) of a compend in which the author seeks to deal with the historical development of "philosophical problems" rather than with "philosophers" in their chronological order. The main divisions of historical time are to be preserved (Greek thought by itself being here put first), and biographical information is not omitted by the way; but such information is made quite subordinate to what the author holds of greater importance—the orderly exposition of the answers given to the chief philosophic questions that, in succession, have engaged the best thought of the race. It is a good idea to attempt thus to keep the "philosophical" from being lost in the "historical"; and Prof. Windelband's beginning promises well for the interest and value of the whole work. Reserving any critical appreciation till the work is completed, the writer of this note desires only, for the present, to dissociate himself from an opinion expressed in MIND xiv. 155, that an earlier manual of *History of Ancient Philosophy* by Prof. Windelband lacked distinctiveness of treatment. The view he there gave (and here, in the altered form, repeats) of the Democritean philosophy as a truly constructive system, standing over against the Platonic, departs very considerably from the usage of previous (general) historians, and—what is more to the purpose—departs in a way that materially helps to comprehension.

Psyche. Seelencult und Unsterblichkeitsglaube der Griechen. Von ERWIN ROHDE. Erste Hälfte. Frieburg i. B.: J.C.B. Mohr (Paul Siebeck), 1890. Pp. 294.

The author does not tell us anything as to the forthcoming part of this work; but the present part by itself is sufficient to mark it out as of importance both for its clear, full and interesting presentation of the facts and for its general idea. What is treated of so far is the development of the Greek popular (as distinguished from philosophical) view of the soul and of its immortality. The principal heads under which the development is studied are :—Belief in souls and cult of souls in the Homeric poems (pp. 1—62); Separated souls, Islands of the Blest (pp. 63—103); Cave and mountain-dwelling souls and deities (pp. 104—136); Heroes (pp. 137—186); The cult of souls (pp. 187—255); The Mysteries of Eleusis (pp. 256—276); Representations of life in the other world (pp. 277—294). Without seeking to establish a theory of the origin of Greek religion generally from "ancestor-worship," the author brings out all the evidences of the presence of ancestor-worship among the religious ideas historically recorded. Everywhere he finds occasion to show the long persistence of those ideas of the life and power of separated souls in which ancestor-worship had its origin. In Homer, first of all, he is able to point out distinct traces of older beliefs than those that prevail in the Homeric poems themselves. Homer's view of the soul he regards as having a certain individual character (though never actually *opposed* to the popular belief) and as indicating the last stage of a development of belief that has long been going on. For Homer, all souls, once finally separated from the body, dwell together in an underworld and have no influence on the world of living men. In the upper world there are no ghosts; and there is no immortality deserving of the name except in those rare cases where a particular person is by special favour removed from the world without separation of soul and body. Imperfectly understood customs and ceremonies recorded in Homer indicate, however, that this was not the primitive Greek way of viewing the soul; that in earlier times the separated soul had been thought of as much less shadowy and as still having power on earth. Further evidence of the more primitive belief is found in Hesiod, who records cults that had persisted in the agricultural villages of the Grecian mainland afterthey had been forgotten by the Ionic Greeks of the seafaring towns of the coast of Asia Minor. Yet even here the belief in a real immortality is thrust into past time. The separated souls of men of former times are regarded as enjoying immortality in abodes outside Hades; but the souls of the present race of men survive only in the shadowy way represented in Homer. The general cult of souls has, as it were, stopped. It now exists only in relation to the men of former ages, and has thus become an "ancestor-worship" that has ceased to multiply the objects of its devotion. The belief in an immortality of favoured individuals even of the present race of men, as the author goes on to show, has in the meantime never wholly ceased. For Hesiod, not only was the earth formerly peopled by races of men of whose immortality a tradition is preserved, but there is a constant new growth of legends of men exceptionally and specially immortalised. According to the view of the soul held in different periods, this immortality is differently conceived. In the Homeric scheme real immortality can be conferred only by continued union of body with 'psyche'. Afterwards the earlier belief which attributes continued activity and consciousness to the separated soul is revived more and more. It is not, however, from legends of immortalised persons that the revived belief in a general immortality takes its origin. The origin of this is from those elements of the cult of souls that were preserved in local and family worships and in the religious ceremonies connected with

them. The cults that had persisted beneath the decay of primitive beliefs at length revived the beliefs in which they had their source. The idea of the continued consciousness and activity as distinguished from bare survival of the 'psyche' was in the end fully recovered. There was once more a belief in the natural immortality of all men. To the hopes excited by this restored belief the Eleusinian mysteries were an appeal. In the mysteries was sought, not a demonstration, by way of symbolism or otherwise, of the immortality of the soul—for this was now presupposed—but a livelier idea of the *mode* of existence of departed souls.

Das Bewusstsein und sein Object. Von Dr. JOH. WOLFF, Professor der Philosophie an der Universität Freiburg (Schweiz). Berlin: Mayer & Müller, 1889. Pp. xi., 621.

Discussions of psychological questions with a view to Theory of Knowledge. The treatment is from a somewhat old-fashioned point of view, as the author frankly acknowledges; the "trustworthiness of consciousness"—that is, of its immediate deliverances on disputed questions of philosophy—being assumed as an axiom. For the metaphysical basis of all psychological discussion the author assumes "a substance, a substratum, bearer, cause of psychical appearances, not a mere phenomenon, and also not a sum of phenomena". The problem he takes up at present is that of the construction of the mental life from its elements. These, he finds, are not "sensations," but "forms" or aspects. Two sides of the mental life which psychological analysis at once distinguishes are "Consciousness and its Object": hence the title of the book. Applying the results of his psychological analysis to the theory of knowledge, he finds that the substantiality of the Ego is testified to immediately by "internal consciousness," which yields with similar immediacy a considerable number of other concepts and axioms, including the law of causation (pp. 614-5). The "evidence" with which consciousness testifies to the applicability of concepts to reality and to the truth of axioms is "a phenomenon *sui generis*". The existence of real external objects causing the external reference of groups of phenomena is "physically" certain, but has not the immediate and axiomatic certainty of the substantial subject or Ego. Here the immediate certainty is the external reference; the externality of the cause is inferential.

Geschichte der Atomistik vom Mittelalter bis Newton. Von KURD LASSWITZ, 2 Bände. Hamburg u. Leipzig: Leopold Voss, 1890. Pp. xii., 518; viii., 609.

Specially trained in mathematics and physics, the author of this work is also fully alive to the philosophical import of his subject; and the result of his extensive and protracted research is much more than a series of chapters added to the history of physical science. So interwoven as physics and philosophy were in the thought of all the great heads of the 17th century, the history of the one when broadly enough conceived goes far to exhaust the historical interest of the other. Moreover, when, as in the present case, philosophical insight has joined with it an ability to judge of the earlier efforts at scientific understanding of the material world in the light of the latest, the general epistemological problem of Matter is helped forward in no mean degree. The author is able to limit his specific inquiry downwards, at the stage when the "corpuscular theory" proper gives place to the different conceptions with which the genius of Newton inaugurated the modern science of physics; upwards he does not seek to extend it, directly, beyond that

Middle Age to which the modern period joins on without break. But, if he chooses the later time, and especially the 17th century. as that in which the atomistic movement can be followed, in the full light of day, till it culminates and becomes spent, he does not fail to take due account of all that the ancients had been able to urge for and against a corpuscular doctrine of matter. Aristotle's opposition to the doctrine, as influencing the Christian Schoolmen, gets special prominence, before the author traces its mediæval revival in the philosophic or scientific work of Arabian thinkers. When he passes to its definite revival in the West, under non-Aristotelian Greek influence, or through the independent thought of the eager 16th century, he has then and later a number of individual efforts to chronicle which have not hitherto secured the recognition they deserved. In the 17th century may specially be noted his careful appreciation of Hobbes's philosophical contribution (ii. 207 ff.); still more, his assertion of the great Huyghens's claim to be regarded as highest representative of the corpuscular theory for purposes of effective science. An endeavour will be made to give, later on, some more particular account of the wide range of Herr Lasswitz's research and of the import of the ideas which he seeks to convey in the course of his exposition. Meanwhile his two volumes are strongly pressed on the attention of all who are interested in the philosophy of science.

RECEIVED also :—

J. G. Frazer, *The Golden Bough:* A Study in Comparative Religion, Lond., Macmillan & Co., pp. xiii., 409, 407.

C. Mercier, *Sanity and Insanity*, Lond., W. Scott, pp. x., 395.

T. E. S. T., *The Two Kinds of Truth*, Lond., T. Fisher Unwin, pp. xvi., 381.

E. B. Poulton, *The Colours of Animals, their Meaning and Use*, Lond., Kegan Paul, Trench, Trübner & Co., pp. xv., 360.

F. Jordan, *Character in Body and Parentage*, Lond., Kegan Paul, &c., pp. 111.

J. M. Robertson, *Christ and Krishna*, Lond., Freethought Pub. Co., pp. 156.

H. Oldenberg, J. Jastrow, C. H. Cornill, *Epitomes of Three Sciences* (Comp. Philology, Psychology, O.T. History), Chicago, *Open Court* Pub. Co., pp. 139.

P. Petroz, *Esquisse d'une Histoire de la Peinture au Musée du Louvre*, Paris, Alcan, pp. 290.

H. Goitein, *Der Optimismus und Pessimismus in der jüdischen Religionsphilosophie*, Berlin, Mayer & Müller, pp. viii., 112.

G. Heymans, *Die Gesetze und Elemente des wissenschaftlichen Denkens* i., Leiden, S. C. van Doesburgh, pp. 270.

Stiborius, *Die Kategorien der sinnlichen Perception*, Leip., G. Fock, pp. 144.

P. Barth, *Die Geschichtsphilosophie Hegel's u. der Hegelianer bis auf Marx u. Hartmann*, Leip., O. R. Reisland, pp. 149.

NOTICE will follow.

IX.—FOREIGN PERIODICALS.

THE AMERICAN JOURNAL OF PSYCHOLOGY.—Vol. iii., No. 1. P. C. Knapp—The Insanity of Doubt. [A fairly comprehensive survey (with bibliography) of the work that has been done on this subject—defined, not very neatly, as "a form of mental disturbance, which is brought about by certain disturbances of the psychical processes, to which the various names of insistent or fixed ideas or imperative conceptions are given".] W. B. Lombard—The Effect of Fatigue on Voluntary Muscular Contractions. [An experimental demonstration that forced exertion of fatigued muscles results in a rhythmic alternation of recovery and loss of power. The periodic renewal of power appears to the author to depend on changes in the central nerve-system.] J. Jastrow—Studies from the Laboratory of Experimental Psychology in the University of Wisconsin. [A number of minor researches, with students as helpers, directed mostly to points connected with the problems of the psychophysical law: firstfruits of a laboratory instituted in 1888.] G. S. Hall—Children's Lies. [An interesting and subtle discussion, with classification, of the forms of unveracity displayed by school-children, based upon a large collection of facts made by a number of female teachers.] G. S. Hall—A Sketch of the History of Reflex Action. [Introductory.] Psychological Literature. [Surveys by different hands, under the heads, Nervous System, Heredity and Sex, Criminology, Experimental, Abnormal, Miscellaneous.]

REVUE PHILOSOPHIQUE.—An. xv., No 4. A. Fouillée—L'évolutionnisme des idées-forces. iii. Les conséquences pratiques de la théorie (fin). [Continues the argument for the efficiency of mental factors in the real process of things. Visual and tactile representations of motion are only a partial way of representing the real,—just as partial as sounds, temperatures, &c. If we compare the "external" with the "internal" mode of apprehension, we find that the internal is "richer," more "complete". Instead of being the *reality*, motion is only a mode of symbolical representation corresponding to something that consciousness seizes in ourselves when it is at its most rudimentary and its poorest. The generality of the mechanical and quantitative aspects of phenomena gives them a scientific advantage, but the philosopher cannot regard the quantitative and mechanical side of the real as exhausting its nature and its basis. If motion is not transformable into consciousness; if the real relation is that the sum of the corporeal movements of an organism *corresponds to* the sum of its psychical states; this is not to say that consciousness is without force. In reality we get the notion of force or activity entirely from consciousness. The article ends with a brief application of the general theory of "idea-forces" to ethics.] J.-J. Gourd—Un vieil argument en faveur de la métaphysique. [Both for questions of existence and of essence, "phenomenal science" properly understood suffices. All metaphysic has for its object "the ultra-phenomenon, that which goes beyond experience". But from appearances we can logically arrive only at appearances. Within the world of phenomena there is room for all those theoretical contrasts of which one term has usually been placed within and one without the phenomenal world. Subject and object, true and false, and so forth, are contrasts within the world of phenomena. The true justification of metaphysic is its requirement on practical grounds.] L. Proal—La responsabilité morale des criminels. [Argues to the doctrine of Free-will (1) from its implication in all penal codes, (2) from the fact that criminals themselves acknowledge their moral responsibility.] Rev. Gén. (L. Arréat—Récents

travaux sur l'hérédité). Analyses, &c. (W. A. Macdonald, *Humanitism*; A. W. Holmes-Forbes, *Know Thyself*, &c.). Rev. des Périod. Société de Psychologie Physiologique (J. Héricourt—Projet de questionnaire psychophysique). No. 5. H. Lachelier—La métaphysique de Wundt (i.). [Exposition of Prof. Wundt's *System der Philosophie*.] J.-M. Guardia—L'histoire de la philosophie en Espagne. [Discusses some recent Spanish writers on the history of philosophy in Spain.] J. Payot—Sensation, plaisir et douleur. [Every conscious sensation is the translation, in terms of consciousness, of a reaction of the whole organism on an external impression. With sensation, pleasure and pain are inextricably joined; being results of modifications of the state of the organism as regards force. The vital functions require certain expenditures; this is the "debit" of force. There is so much to expend; this is its "credit". When, with a given sensation and a given state of the organism, debit is in excess of credit, or vital need in excess of force required for reaction, there is pain; when force is in excess of need, there is pleasure. Pleasure and pain, accordingly, do not produce, but are the results of, an increment or decrement of vitality.] Rev. Gén. (G. Tarde—Misère et criminalité). Analyses, &c. Société de Psych. Phys. (C. Richet—Un cas de cécité expérimentale double chez un chien, avec autopsie. P. Langlois et C. Richet—De la sensibilité musculaire de la respiration). No. 6. G. Sorel—Contributions psycho-physiques à l'étude esthétique (i.). [The office of psychophysic—the "new science" founded by Fechner—is in relation to æsthetics negative rather than positive; but its negative service may be very great. At the beginning of every æsthetical investigation the two questions must be put: (1) Are all representations of the same species? (2) Does pleasure result from relations between things represented? First, psychophysical formulæ are found to be specific, not only according to the sense that is exercised, but also according to the kind of representations within the particular sense. The special case of music is then discussed; the result being the rejection of all doctrines which, like that of Euler, trace musical feeling to mathematical proportions unconsciously perceived. A positive theory is finally suggested, which traces the two opposite effects of music—its exciting and its calming effect—to a single cause, *viz.*, its exclusive occupation of the attention and consequent stoppage of the reasoning process. When the ideas are perturbed to begin with, or when the absorption is not excessive, the effect is calming; when the absorption is complete, and the normal reasoning process in consequence wholly suspended, the effect is the mystical excitement known among religious sects in the East and familiar to ancient writers.] H. Lachelier—La métaphysique de Wundt (fin). P. Regnaud—Sur l'origine et la valeur des fonctions casuelles dans la déclinaison indo-européenne. E. Naville—La science et le matérialisme. [Psychical phenomena, having, according to the doctrine of Conservation of Energy, no mechanical equivalent, differ in themselves, and independently of their mode of being known, from physiological phenomena. Materialism must therefore be rejected on scientific grounds. Also, abnormal facts recently attended to throw doubt on the concomitance of *ordinary* material phenomena with all activities of mind. This again makes materialism unscientific; suspension of judgment at least being called for. The materialistic doctrine does not really emerge from science, but is put into it by *a priori* speculators.] Analyses, &c. Société de Psych. Phys. (Pierre Janet—Une altération de la faculté de localiser les sensations).

Rivista Italiana di Filosofia.—An. v. 1, No. 2. A. Nagy—Sulla recente questione intorno alle dimensioni dello spazio. R. Benzoni—Recenti soluzioni del problema della conoscenza. [Treats of the doctrines

of perception put forth recently by Wundt and Uphues (who are placed together and compared in detail), von Hartmann and G. L. Fischer. The conclusion is that on the solution of the question of perception depends the decision of the controversy between idealism and realism.] S. Ferrari—La scuola e la filosofia pitagoriche (ii.). Bibliografia, &c. (F. Max Müller, *Lectures on the Science of Language* and *Natural Religion*, &c.). No. 3. L. Ferri—Il problema della coscienza divina in un libro postumo di Bertrando Spaventa. S. Ferrari—La scuola e la filosofia pitagoriche (iii.). [Points out, in some critical remarks, the originality of the Pythagorean doctrine. So far as it was not the result of independent thought, it was determined by the characteristics of the Dorian race and institutions, not by influences from the East.] N. R. d'Alfonso—La lotta nell' educazione. [On the importance in education of the struggle against external causes tending to injure the organism or the mind.] A. Marconi—Della incoerenza morale. [Cites inconsistencies in the moral characters of individuals, and finds that "incoherence," or the mixture of good and evil tendencies, is part of the very structure of human beings.] Bibliografia, &c.

Rivista di Filosofia Scientifica.—Vol. ix., No. 1. G. Tarozzi—Giovanni Maria Guyau e il naturalismo critico contemporaneo (i.). [On Guyau as poet and æsthetician]. E. d'Ovidio—Sulle origini e sullo sviluppo della matematica pura. Resoconti di Congressi e Società scientifiche (Associazione britannica pel progresso delle scienze). Rassegna Bibliografica (J. P. Mahaffy and J. H. Bernard, *Kant's Critical Philosophy for English Readers*, &c.). Rassegna dei Periodici. No. 2. P. Vecchia—La pedagogia nei suoi rapporti con le scienze. [A noteworthy point of this article is the condemnation, based on the fact of psychological heredity, of "didactic methods which, without wishing it, render the easy difficult". If there is any accumulation of aptitudes—in civilised races, for example, as compared with savage—then the educator may easily go to excess in trying to simplify the process of individual acquirement. "Just as there would be fatigue in traversing in a hundred small steps a path that we could complete in twenty ordinary paces, so we weary the mind of the child when we oblige it to receive drop by drop that which it could take in at a draught. To this defect an ill-understood objective teaching is frequently incident." The author announces a forthcoming Italian translation of Mr. Sully's *Teacher's Handbook of Psychology*.] G. Tarozzi—Giovanni Maria Guyau, &c. (ii.). [On Guyau's ethical and religious philosophy.] A. Alberti—Sulla relazione fra il peso atomico e l'ufficio fisiologico degli elementi chimici. Riv. Anal. Rassegna Bibliografica. Rassegna dei Periodici.

Philosophische Monatshefte—Bd. xxvi., Heft 5, 6. G. Geil—Die schriftstellerische Thätigkeit des Diogenes von Apollonia. [The assertion of Simplicius that Diogenes of Apollonia wrote other works in addition to the treatise περὶ φύσεως, which alone had been preserved down to his time, ought not to be so lightly set aside as it has usually been by modern historians of philosophy.] A. Biach—Aristoteles' Lehre von der sinnlichen Erkenntniss in ihrer Abhängigkeit von Plato. [Seeks to show, by reference chiefly to *Theaetetus*, *Timaeus* and *Philebus*, the dependence of Aristotle on Plato in the theories of sense, memory and (to a less extent) imagination.] H. Cohen—Zur Orientirung in den Losen Blättern aus Kants Nachlass. Th. Lipps—Aesthetischer Litteraturbericht (Schluss). [Deals with works on the æsthetics of poetry. The procedure of æsthetics can never become identical with that of natural science, as is contended by one of the writers discussed. The reaction against "philosophical

legislation" in the theory of poetic is now complete, and it has to be seen that a true 'poetic' is normative as well as scientific. So far as it is scientific, it is based on psychology. The author insists again on his doctrine that the expression of a real or imagined internal life (always under a humanised form) is the essential thing in art. Near the end he has some acute remarks on the theory of "poetical justice" as applied to tragedy.] Recension. Litteraturbericht, &c. Heft 7, 8. A. Döring—Ueber den Begriff des naiven Realismus. [The opposite of "naïve realism" is not "transcendental," but "critically reflective" realism. Of this there are several stages; v. Hartmann's "transcendental realism" being one stage.] E. Wille—Verbesserung einiger Stellen in Kant's K. d. r. V. Recensionen. Litteraturbericht, &c.

VIERTELJAHRSSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE.—Bd. xiv., Heft 2. A. Döring—Was ist Denken? [Thinking is spontaneous combination of representations in the service of an end that has worth and necessity for our existence and well-being: its first mark, accordingly, is "timological necessity of the end". Its other marks are (2) teleological or practical necessity of the means, (3) theoretical truth or rightness of combination.] H. Höffding—Ueber Wiederkennen, Association und psychische Activität (iii.). [Association by similarity is irreducible to "contact-association". The laws of association, separately formulated, are abstract expressions of a real process which always involves both "contact" and "similarity," one or other of the two preponderating in particular cases. All association is an "expression of the energy of consciousness". Spontaneous activity goes in the direction of least resistance and easiest discharge: by this principle both forms of association are explained. The true fundamental law of association is Hamilton's "law of totality"; the unity of consciousness being the presupposition of all association. Comparison is to be explained by transitions of "attention". It has two forms—the "involuntary" and the "voluntary". "Voluntary comparison" is identical with "true thought". No special 'faculty' of Thought need be assumed in addition to Association.] J. Petzoldt—Maxima, Minima und Oekonomie (i.). Selbstanzeigen, &c.

PHILOSOPHISCHE STUDIEN.—Bd. vi., Heft 1. W. Wundt—Zur Frage der Localisation der Grosshirnfunctionen. [A powerful criticism of H. Munk's doctrine of localised cerebral functions, asserted by Munk (especially in a Berlin Academy memoir of 20th June, 1889) to be an application as well as confirmation of the Müller-Helmholtz theory of specific energies. Wundt finds nothing to be advanced by Munk that can in any way turn the edge of his own objections (as urged in *Phys. Psych.*) against the famous theory; and takes occasion to expose the psychological crudity of the second part of Munk's doctrine, in which a fanciful assertion of a "soul-centre" (for memory-images) is superposed upon a delimitation of "cortex-centres" not differing in principle from the now accepted separation of sensory areas.] C. Lorenz—Untersuchungen über die Auffassung von Tondistanzen. [An elaborate research, of which the main results are (1) that there is direct apprehension of pitch-interval, apart from any implication of the partial tones that constitute timbre-relationship; (2) that it does not conform to Weber's law, though Weber and Fechner regarded it as the strongest and most obvious instance in their favour. The author also finds that the method of considerable differences (at least when combined with the method of correct and mistaken cases) is applicable to sounds as well as to light-intensities.] W. Brix—Der mathematische Zahlbegriff u. seine Entwicklungsformen (ii.). [An

extensive third chapter of this essay, devoted (the chapter) to a critical survey of the main epistemological theories of number from ancient to modern times. The English nominalists (from Hobbes) receive their due share of attention.]

ARCHIV FÜR GESCHICHTE DER PHILOSOPHIE.—Bd. iii., Heft 3. P. Natorp—Aristipp in Platons Theätet. [Accepts F. Dümmler's view that the sensualistic theory in the *Theaetetus* 156A—157C is taken from Aristippus (not directly from Protagoras), at the same time giving grounds for not accepting all Dümmler's minor positions.] A. Döring—Die aristotelischen Definitionen von *σύνδεσμος* und *ἄρθρον* Poetik c. 20. H. Siebeck—Ueber die Entstehung der Termini natura naturans und natura naturata. [The terms 'natura naturans' and 'natura naturata' were already in use in the middle of the thirteenth century. The Spinozistic distinction, in its essence, is an old one, having been already drawn by Proclus, &c., but it was expressed by other terms. How did the new terms come into use to express it? The answer is, from the Latin translations of Averroes. Here they have a different meaning from their later one, the Spinozistic distinction being otherwise expressed by Averroes; but, once suggested, they were found the fittest terms to express the distinction.] C. E. Ruelle—Damascius: Son traité des premiers principes. [Defends the unity of the text of Damascius; proposing afterwards to show its importance for the history of Græco-Oriental philosophy, and to describe its contents and its relations to other writings of the Neo-Platonist school.] R. Stölzle—Eine neue Handschrift von Giordano Brunos liber triginta statuarum]. [Description of MS. found by the author in the municipal library at Augsburg.] W. Lutoslawski—Eine neuaufgefundene Logik aus dem XVI. Jahrhundert. [The *Liber triginta statuarum*, of which a manuscript-copy has been discovered by the author of the preceding article, forms also a portion of the Noroff MS. preserved in the Rumianzow Museum at Moscow. As it is a work of Bruno that is quite unknown, a long extract is here given, extending over pp. 395—417 of the *Archiv*.] W. Dilthey—Der Streit Kants mit der Censur über das Recht freier Religionsforschung. [Gives extracts from the "Rostock MSS." bearing on Kant's conflict with the censorship as to the publication of writings on religion.] H. Diels—Ein gefälschtes Pythagorasbuch. Jahresbericht (B. Erdmann, C. B. Spruyt). Neueste Erscheinungen.

PHILOSOPHISCHES JAHRBUCH.—Bd. iii., Heft 1. Hayd—Vereinbarkeit oder Unvereinbarkeit unbeschränkter Freiheit der wissenschaftl. Forschung mit einem dogmatisch bestimmten Glaubensbekenntniss (i.). ["The Catholic is in no way limited in his freedom to *investigate*, but in his freedom to *err*." The *results* of scientific research, not scientific *research* itself, are the proper object of ecclesiastical control. Men of science, accordingly,—though not the uninstructed general public,—should be left free to pursue their investigations without interference until it is seen what conclusions are arrived at. And, since a non-Christian may lawfully investigate the grounds of belief—since otherwise his conversion would be impossible—so also may a Christian. This article is published on the author's sole responsibility, and appears with an editorial *caveat*. The opinion that the prohibition of writings dangerous to the faith affects only the uninstructed, and that the Church should not forbid their publication and examination "in learned circles, *to which judgment belongs*," is held to be "rash" (*gewagt*). And, by those who have accepted the faith, testing of its authority must never be "dubitative," but only "confirmative".] C. Gutberlet—Der Kampf um die Willensfreiheit (ii.). J. Costa-Rossetti—Die Staatslehre der christlichen Philoso-

phie (iii.). [The chief objection to the doctrine (set forth by the author) of "the mediate divine right of sovereigns" is that it appears to place sovereignty, at the origin, in "the whole people". Since, however, the Catholic writers on whose expositions it is founded held the patriarchal theory of the origin of kingship, this objection falls to the ground.] E. Illigens—Die unendliche Menge (ii.). Recensionen und Referate. Philosophischer Sprechsaal (N. Kaufmann—Erwiderung auf die Kritik der thomistischen Erkenntnisslehre). Zeitschriftenschau. Miscellen und Nachrichten. Heft 2. C. Braig—Eine mongolische Kosmologie (i.). [Founded chiefly on a translation of the work of Ssanang Ssetsen (1662), a Buddhistic descendant of Genghis Khan. The "instinctive aim" of the cosmological speculation set forth was a theistic doctrine like that of St. Augustine, but, from psychological reasons explained, it went astray into "the labyrinth of monism".] J. Costa-Rossetti—Die Staatslehre der christlichen Philosophie (Schluss). [Conclusion with summary. The reverence due from subjects to sovereigns is no smaller on the supposition of "mediate" than of "immediate" divine right. The two doctrines, however, present important theoretical differences, and the latter is seen from its consequences not to be the true scholastic theory.] E. Illigens—Die unendliche Menge (Schluss). [Concludes an argument that the number of existing things is always finite, but that there is no limit to the number of possible things.] M. Sierp—Pascals Stellung zum Skepticismus (iii.) Recensionen und Referate. Philosophischer Sprechsaal (Wie ist die Pädagogik Herbart's und seiner Anhänger von Katholischem Standpunkte aus zu beurtheilen?). Zeitschriftenschau. Novitätenschau. Miscellen und Nachrichten.

Zeitschrift für Psychologie u. Physiologie der Sinnesorgane.—Bd. i., Heft 1. This first No. of a new bi-monthly has come to hand too late for it to be possible to give more than a bare chronicle of the contents. They are as follows:—Zur Einführung. H. v. Helmholtz—Die Störung der Wahrnehmung kleinster Helligkeitsunterschiede durch das Eigenlicht der Netzhaut. E. Hering—Beitrag zur Lehre vom Simultankontrast. G. T. Fechner—Ueber negative Empfindungswerthe. S. Exner—Das Verschwinden der Nachbilder bei Augenbewegungen. H. Aubert—Die innerliche Sprache u. ihr Verhalten zu den Sinneswahrnehmungen u. Bewegungen. T. Lipps—Ueber eine falsche Nachbildlokalisation. F. Schumann—Ueber das Gedächtniss für Komplexe regelmässig aufeinander folgender, gleicher Schalleindrücke. The contents of the No. may be taken as fairly indicating the scope of the Review, when it is added that future Nos. will also include summary reports of all new results bearing on its special field that appear either in other periodicals or in independent publications. Just as, on the one hand, it has been found necessary or advisable, in Germany, to start a special Review for History of Philosophy, so, on the other hand, there is good reason, in these days of specialised research, for separating out from the whole range of subjects covered by the older kind of philosophical journal those particular departments of scientific inquiry to which this new Review will be confined. Psychology, while understood in its widest sense as positive science, is rightly placed first in the title as marking out the subject-matter to which the physiological consideration is to be kept always relevant. (The 'Physiology,' it is explained, will of course not be confined to Sense-organs only, but extend to the Nervous System in general.) The new review is edited by Herm. Ebbinghaus and Arthur König, with the special support of H. Aubert, S. Exner, H. v. Helmholtz, E. Hering, J. v. Kries, T. Lipps, G. E. Müller, W. Preyer, C. Stumpf; and published by L. Voss of Hamburg and Leipsic.

X.—NOTES.

SOME NEWLY DISCOVERED LETTERS OF HOBBES.

Dr. F. Tönnies has discovered, in the National Library at Paris, seventeen letters of Hobbes to the French physician Sorbière, who saw the *De Cive* through the Amsterdam press in 1647, translated it into French in 1649, followed it in 1652 with a French translation of the *De Corpore Politico*, and remained Hobbes's devoted admirer to the last. Dying in 1670, Sorbière left a large mass of correspondence which he had carried on with the notorieties of his time; and this was presently prepared for the press by his son, but did not get into print. It is in the MS. collection so prepared (now preserved in the Paris library) that the Hobbes-letters have been found. Dr. Tönnies gives the whole seventeen at full length (omitting only some useless mathematical matter from the 16th) in the *Archiv f. Gesch. d. Phil.*, iii. 58-71, 192-232, with related letters of Sorbière himself, Mersenne and others, and the necessary commentary; this last marked (in spite of some doubtful statements) by all the high characteristics that have distinguished his previous writing on Hobbes. He quotes as from Nicéron (*Mémoires des Hommes illustres*, iv. 96) a reference to the unpublished collection (prepared by the younger Sorbière, 1673) which I cannot find in the 1727 edition; but as to the genuineness of the Hobbes-letters there can be no question with anyone that knows those facts and circumstances of the philosopher's life upon which they cast a welcome new light. Five of the seventeen—not the most interesting of the series—did (according to Dr. Tönnies) get into print as early as 1669, in a small collection issued by Sorbière himself, which has become one of the rarest of bibliographical curiosities. Below are given, with a minimum of comment, the first nine, having reference to the really important period of Hobbes's life and work that led up to *Leviathan* in 1651. After the 9th letter in 1649, a break ensued in the correspondence, and, when it was resumed from 1656, the (eight) letters that have been preserved (till 1663) are of such minor importance—having reference mainly to the scientific polemics of Hobbes's old age—that they may be left to the scholar to seek out in the *Archiv*. The general reader, on the other hand—if not deterred by the careless Latin in which so great a master of English, and also in his books effective enough Latin stylist, was content to write familiarly—will find in the earlier letters not a few points of biographical or philosophical interest. Extant letters of Hobbes were before few in number.

The first letter bears upon the new edition of *De Cive* which, from 1646, Sorbière had undertaken to bring out at the Elzevir press. The book, under title of *Elementorum Philosophiae Sectio Tertia, De Cive*, had appeared, quarto size, in 1642, at Paris; not anonymously (as Dr. Tönnies, misled by some correspondence at the time between Sorbière and Martel, another French friend of Hobbes, supposes) but still only with the initials 'T. H.' at end of the dedicatory letter to the young Earl of Devonshire. The few copies then printed having, as Gassendi said, excited rather than satisfied thirst, Hobbes was prevailed on by Sorbière, who towards 1645 had become personally known to him, to make a more effective publication. For this he provided a new preface

and footnotes, while Gassendi and Mersenne supplied commendatory epistles. In the letter are to be noted his general distrust of professional rivals and his special suspicion of Descartes (whose correspondence, however, shows no mean appreciation of the *De Cive* on its first appearance); cp. *Hobbes* ('Blackwood's Phil. Classics'), p. 58.

I. Ex literis tuis ad D. Martellum nostrum quibus te venisse Hagam cognovi incolumem, hoc ipso die (mi Sorberi dilectissime) cepi voluptatem, quam tua bonitas et timor itinerum, incommoda atque pericula sola recordantis, non patiebantur esse mediocrem. Itaque quod molestis illis cogitationibus primo tempore me liberaveris, id quoque amicissime a te factum est. Quod in iisdem literis praefationem meam laudas, secunda voluptas erat, nam et delector judicio tuo, et quamquam nimium laudas, tamen affectus quo id facis ad id quod ago utilis est, nam ut typographo spes fiat fore ut liber ille vaeniat, laudatoribus et magnis et quibus credi possit opus est. Itaque et D. Gassendus et R. P. Mersennus librum illum hyperbolice laudaverunt, mihi arte [? certe] potius quam sibi satisfacientes; quorum utriusque literas jam pridem te puto accepisse. Quae editionem impedire posse videntur, sunt primo si ejusmodi librum scierint sub praelo esse ii qui dominantur in Academiis, ad quorum pertinet existimationem ne quis in ea doctrina quam profitentur viderit quod illi prius non vidissent. Itaque tacite peragendum est, nec quaerenda testimonia nisi quae obtineri posse certo scias. Neque ergo si prohiberi potest, typographo permittendum est homines suo ipsius judicio doctos de libri utilitate consulere. Deinde cavendum est ab iis qui cum pleraque probent, reliqua improbant, nam magistros agunt, ac laude quam privatim ipsi mihi tribuunt contentum me debere esse putant, publicam invidebunt. Praeterea, si id agi ut edatur liber meus (vel hic vel quilibet alius) sentiat vel suspicetur D. Des-Cartes, certo scio impediturum esse si potest, quod unum velim mihi credas qui scio. Caeteram cautelam omnem tibi permitto. Nam et prudentiam et voluntatem in me tuam penitus perspectam habeo. Cum spem edendi videris aliquam, fac me quaeso certiorem quam primum potes, ut eam spem, si fieri possit, mecum Montalbanum feram. Illuc iturus sum cum D. Martello, qui et causa mihi eundi maxima est, quanquam accedat altera haec ut perficiendae parti primae meorum Elementorum majore otio vacare possim. Ibimus circa finem mensis proximi, aut aliquanto citius. Vale. Tuus devinctissimus, Thomas Hobbes. Parisiis Maj. 16. 1646.

The second letter replies to one from Sorbière, which appears to have crossed (rather than answered) the first. The shortened title of the book, when it finally came out in 1647, was *Elementa philosophica de Cive*. What Hobbes says of his work up to date upon the *De Corpore* is, otherwise, the thing of most importance in the letter. As to "Opticæ meæ," cp. *Hobbes*, p. 59. The "Johnson" who had promised to send him the physical system of Regius (Le Roi, Descartes' eager follower) is mentioned in Sorbière's letter in an accidental conjunction, which is too odd not to be quoted here: "Quam gratum fecerim viris summis, solideque philosophantibus, *Boswellio*, *Johnsonio*, Bornio," &c.

II. Literis tuis quas a D. Martello proxime accepi magnopere delectatus sum. Fructum enim omnis operae et laboris praeteritae amplissimum fero, quod placeant ea quae scripsi viris illis tantis quos nominasti, et tibi quoque; spem fecisti fore ut edantur. Quod scribis videri Elzevirio, si prodeat liber tanquam pars majoris operis nondum editi, homines illum minus libenter empturos esse, ego idem censeo, quare

mutetur titulus, fiatque simpliciter DE CIVE. Caeterum mutationem tituli sequitur necessitas ea loca tollendi, in quibus mentio aliqua fit sectionis praecedentis, quae quidem loca non multa sunt, nec talia quae non possunt tolli facillime, excepto initio capitis primi quod poterit esse huiusmodi: *Naturae humanae facultates ad quatuor genera reduci possunt: vim corpoream, experientiam, rationem, affectum. Ab his sequentis doctrinae initium capientes inquiremus primo loco quid animi habeant homines illis facultatibus praediti, alteri adversus alteros.* Et an. Item initio capitis quinti pro his verbis *Ostensum est sectione praecedenti* substitui haec possunt *Manifestum per se est.* Caeteris locis cum mentio sectionis praecedentis sub parenthesi tantummodo fiat, poterit ea sine hiatu, sine incommodo deleri, et pag. 4 linea 21 et pag. 17 linea 15 et fortasse uno aut alio loco alias. Tollantur ergo eae parentheses, et fiat titulus ut dixi brevis simplexque DE CIVE, sed cavendum est ne superiorum capitum articulorumve citationes deleantur. Itaque nisi ubi vox *sectio* occurrit, nil movendum est.

Quod in Elementorum meorum sectione prima tamdiu versor, partim quidem causa est pigritia; sed maxime quod in sensibus meis explicandis non facile placeo mihimet ipsi. Nam quod in doctrina morali fecisse me spero, id quoque in Philosophia prima, et in Physica facere studeo, ne locus sit relictus contrascriptori. Attamen de ea absolvenda intra annum vertentem, modo vivam et valeam, minime dubito. Itaque ut rei magis vacem, stat secedere rus, praesertim Montalbanum, nostri Cl. Martelli gratiâ. Expectatio amicorum excitat industriam meam aliquantulum, sed tu me blanditiis tuis ad scribendum potenter adigisti atque impulisti. Accedit quoque quod ipse Opticae meae (quam anglice scriptam dedi Marchioni de New Castel) firmitate et robore delectatus, cupiam primo tempore emittere eam latine. D. Iohnsonnius promisit mihi brevi se missurum D. Regii Systema Physicum; ut id fiat quam primum quaeso adjuva. Vidi enim jam quaedam dogmata ejus physica in libro quodam medico, quae mihi valde placuerant. Vir optime, vale. Parisiis Iuni 1° 1646. D. Gassendo salutem tuo nomine dicam cras; aegrotat a febre quae tamen nunc leviuscula est. Mersennus nondum rediit.

The third letter answers more than one from Sorbière, who had conceived no ordinary expectations on learning that Hobbes (towards the end of summer) had been appointed tutor to the Prince of Wales, now come to Paris as a fugitive (cp. *Hobbes*, p. 63). Hobbes, in the important final paragraph, tells how completely and for what reasons his engagement (as mathematical teacher) was devoid of all political significance. The "Epigramma D^{i} Bruno" was a legend composed by an admirer for the portrait that was to be given with the *De Cive*.

III. Clarissime charissimeque Sorberi, cum a te ad Martellum nostrum diu nullae literae venissent cogitabam mecum modo typographum rescripsisse, modo folium aliquod libri vel annotationum interiisse. Nam de valetudine tua et tuorum nolui, de conatu tuo non potui, dubitare. Sed quidquid erat impedimenti, cum nescire moleste ferrem, rogavi D. Martellum ut de ea re ad te scriberet. Id quod nunc factum nollem. Accepta enim epistolâ tuâ, tantas tibi gratias debere me sentio ut querelarum poeniteat et pudeat, si tamen ille quicquam questus est, nam rogavi ut quaereret, non ut quereretur.

Literas tuas ad D. Gassendum et P. Mersennum (una cum epigrammate D^{i} Bruno) illis curavi tradendas.

Quod attinet ad folium impressum quod misisti, valde mihi placet et

character literarum, et volumen, neque erratum typorum quod alicuius sit momenti, ullum reperio, praeter unum (sed magnum) pag. 1472 ubi pro *Duritas* ponitur *Claritas*. Dixi conclusionis *Duritatem* praemissarum memoriam expellere: id quod verum est. Contra fuisset si dixissem *Claritatem*. Duae illae voces scripturam habent fere similem; propter quam causam, et quia forte putabat typorum compositor vocem hanc *Duritas* non esse latinam (nam saepius dicitur *Durities*) factum est ut pro *Claritate* accepta sit. Vox *Duritas* latina est et Ciceroniana, cum sermo sit de dictis duris, quamquam de corporibus duris *Durities* potius usurpatur.

Quod scribis te sedem Leydae fixurum, vehementer gaudeo, cum tui causa qui conversabere cum doctissimis viris, tum mei qui amicis meis illic euntibus quo gratum facere possim tua ope habiturus sum. Scripsi nuperrime (ante tamen quam acciperem literas tuas) ad Comitem Devoniae patronum meum cui filius est sex [*sc. annorum?*] et unicus, ad quem instituendum opus est viro. Ex tua, Gassendi Martelli commendatione cognovi esse D. Du Prat. Si ille conditionem merito eius convenientem [*cupiet?*], enitar quantum possum, utriusque causa, ut se Lugduno Londinum transferat.

Quod mihi de praesente loco gratulatus sis, agnosco benevolentiam tuam. Sed cave ne eam rem majoris putes esse quam est. Doceo enim Mathematicam, non Politicam. Nam praeceptis politicis quae habentur in libro qui inprimitur, imbui illum, ipsius aetas nondum sinit, et judicia eorum, quorum consiliis aequum est regi illum, semper prohibebunt. Si quid ego diuturno officio gratiae apud eum collegero, scias me eo usurum omni, non tam ad meas quam ad amicorum meorum commoditates, et ad tuorum quoque si aliquos commendaveris. Sed multum sperare neque humilitas mea neque aetas patitur. Vale Charissime Sorberi, et ama Tuum Th. Hobbes. Dab. S. Germ. Octob. 4. 1646.

In the fourth letter, with continued anxious care for the correct printing of his book, there is again sign of Hobbes's grudge against Descartes: he can no longer hope much of Regius, content to copy that original.

IV. Amice clarissime, accepi iam duo a te epistolas in quarum priore quam acceperam ante dies circiter viginti, folium primum incluseras, atque etiam duas epistolas, alteram ad R. P. Mersennum alteram ad D. Gassendum, quas ambas illis dari curavi diligenter; et statim rescripsi. In posteriore accipio nunc tria simul folia prima cum literis ad DD. Martellum et Prataeum quas ad eos jam transmittam. In superiore mea epistola notavi erratum typorum unum pag. 14 l. 2, nempe *Claritas* pro *Duritas*. In secundo folio noto jam duo alia magni momenti, quaeque sententiam corrumpunt, pag. 48 lineis 19 et 23, nimirum vox *quaerere* lin. 19 et vox *Ergo* linea 23, quae ambae delendae sunt, nam illis stantibus sensus nullus est, deletis optimus est. Nescio quomodo voces illae irrepserint, aut quia periodus longa non satis a typorum compositore comprehendebatur, illi visum est locum sic emendare, aut ego redigendo illum locum ita putavi emendandum esse, cum non esset opus, nam in exemplari impresso Parisiis illae voces non sunt. Video periculum magnum esse ne in aliis quoque locis similiter erretur, cum neque mea scriptura satis distincta sit, neque ego neque tu praesentes simus; sin accidat ut reliquum libri sine magnis mendis impressum fuerit, non gravabor meis impensis paginam illam 48 cum adhaerentibus denuo imprimere. Alioqui corrigenda sunt errata, et ante initium libri in conspectum danda sunt, ut ab ipsis lectoribus corrigi possint.—Expecto iam

ut Physica Regii Parisiis venalis fiat; etsi enim de spe mea verba illa (*copie de celuy de M. des Cartes*) aliquantum detriverint, cupio tamen videre quid sit cuius causa librum illum tanta fama antecessit. Agam quantum potero cum D. Gassendo ut quicquid imprimendum habet vobis transmittat, sed agam cum fuero Parisiis, id est, ut opinor circa medium Novembrem; quamquam si in ea re tuis literis non moveatur, minus movebitur sermone meo.

Nil aliud occurrit quod scribam, nisi ut gratias agam tantis officiis tantaque benevolentia dignas; quod est omnino impossibile; crede tamen animum mihi esse gratissimum amantissimumque tui, etsi non sum ita blandus ut ad millesimam partem blanditiarum quae sunt in epistolae tuae fine attingere possim. Jamais homme ne receut si grand compliment que vous m'avez fait; mais je ne le reuoy point, neantmoins je vous en remercie. Vale. Tuus Thomas Hobbes. St. Germ. Oct. 22. 1646.

The fifth letter refers to the portrait (before mentioned) which Sorbière had got engraved, but which could not be used, because the publisher had reduced the size of the volume from the quarto first intended. As for Gassendi, here and elsewhere so often mentioned, if there was one man who was more than Hobbes to Sorbière, it was he.

V. Domine clarissime, amicissime. Accepi heri literas tuas datas pridie Kal. Nov. atque unâ duo folia, in quibus erratum est nullum, praeterquam quae ipse in margine correxisti levia; consentio tibi ne alia mittas donec totus liber impressus sit. De icone incisâ gratias tibi ago, et ne libro praeponatur facile patior. Epistolam tuam ad Prataeum ferendam cras dabo. Martellus noster Montalbani est, scripsit inde ad me semel, exierat Parisiis circa finem Septembris. Do ad eum literas hodie in quibus id quod de illo ad me scripseras, insero. D° Gassendo salutem tuo nomine dixi hodie; in morbum a quo paulo ante convaluerat, rursus ceciderat, nunc autem rursus convalescit. Conveniendi Mersennum et salutem tuam ei impertiendi mihi St. Germanum repetenti tempus non est. Faciam proximo tempore; ab initio Decembris usque ad Festum Paschalis futuri sumus Parisiis. Illic si Prataeum tuum convenire potero, amicitiam cum eo facere conabor. Cura ut valeas. Tui amantissimus, Thomas Hobbes. Parisiis die II° Novemb. 1646.

Though Sorbière had, in fact, sent off a bound copy of the finished work on 29th Jan., 1647, Hobbes had not received it a month later, and writes as follows about the delay of publication: —

VI. Mi Sorberi dilectissime, quo diutius jam quam meum desiderium atque amicitia tua requirebat scribendi ad te officium praetermiserim, causa est tua epistola ultima qua admonebar ne librum meum amplius foliatim expectarem sed totum simul via aliqua quae videretur tibi commodissima. Illud igitur de hebdomade in hebdomadem expectans nolui crebris literis videri flagitare, quod sciebam te quam primum fieri posset sponte facturum. Nunc cum tres menses elapsi sunt ex quo impressio libelli tantuli finiri poterat, cumque amicus tuus Dns Musart, operam suam in mittendis ad te his literis ultro mihi obtulit, praetereunda commoditas ea non videbatur. Itaque te oro ut si quid impressioni oblatum impedimentum sit, certiorem me facias. Tuorum denique erga me officiorum cumulo hoc addas ut rescribas, tum ut quando liber ille expectandus sit, tum quod me amare non desisti certo sciam. Mersennus et Gassendus te salutant beneque valent. Te bene valere et cupio et spero. Tui amantissimus, Thomas Hobbes. Parisiis Feb. 28. 1647.

Ad Martellum nostrum scripsi saepius, nihil rescribit, neque ubi sit neque an sit scio.

Next comes the letter (not before published) of greatest interest. Sorbière had written in March, telling of the copy sent in January and of twenty unbound copies to follow as soon as possible by Elzevir consignment; meanwhile enclosing the first sheet, title-page and a portrait "minus bene expressam" (brought down, apparently, to the reduced size of the book), and promising with the later copies some complimentary verses "Brunonis nostri" (who had written the legend for the original portrait); at the same time urging him to let the publisher have his other works, since so many copies of the *De Cive* had already been disposed of. Hobbes's reply is in many ways remarkable. Finding himself designated (by the tuft-hunting Sorbière) on the portrait as "Serenissimo Principi Walliae a studiis praepositus," he makes, in nervous fear of the possible consequences, all the eager suggestions for undoing of the error with which the letter is filled. New light is thrown upon his relations with the prince and the royalist refugees; but most curious of all is the disclosure of his thought thus early of return to England—more than two years earlier than the previous evidence (cp. *Hobbes*, p. 65) gave any notion of, and more than four years before the return actually came to pass. It now looks as if he might have been thinking of possible return from the time that his patron, the young Earl of Devonshire, had gone back and submitted himself to the revolutionary government in the previous year (perhaps end of 1645). The point is of no little significance, in connexion with the charges made against him on the publication of *Leviathan* in 1651 and his flight from Paris to London which then ensued. The reference to Mersenne at the end of the letter gives Dr. Tönnies occasion to bring forward, from the outlying (but related) correspondence, the interesting fact that Mersenne himself and Gassendi resented, as Catholics, the publication of their laudatory letters with the *De Cive*, when they had written them only for the publisher. Having acted in the teeth of Mersenne's previously expressed wish, Sorbière had afterwards to make what apology he could. In the letters between Sorbière and Mersenne, there are obvious errors of transcription which Dr. Tönnies does much to clear up. I have little doubt, as he also in the end thinks most likely, that Sorbière is wrongly represented (in transcript) as having got the two letters withdrawn from the edition: they stand in my, as they stand in his, copy of 1647. On the other hand, Hobbes's urgent wish for excision of the portrait must have been gratified, for none is given, while the figured title-page bears the simple 'Auctore, Thom. Hobbes, Malmesburiensi'.

VII. Eruditissimo viro D. Samueli Sorberio Amico sincero suo Thomas Hobbes.

Literas tuas, vir clarissime, datas Lugduni Batavorum 4° Nonis Martii, accepi traditas mihi a Mersenno una cum primo folio in quo est imago mea. Quam quidem certo scio a te optima in me voluntate libro praefixam. Veruntamen ita se res habet, temporaque ejusmodi sunt, ut magno emptum vellem ut vel praefixa non esset, vel saltem subscriptio illa Serenissimo Principi Walliae a studiis praepositus sublata exculpta vel abscissa esset. Primo enim, id quod est maximum, qui hodie rerum Angliae potiuntur, causas omnes quibus Stirpem Regiam in invidiam apud plurimos conjiciant, undiquaque sedulo conquirunt atque arripiunt. Cum ergo viderint doctrinae civili adeo ab opinionibus fere omnium hominum abhorrenti praeferri nomen ejus, jactabunt se inimici magnifice, et otium odiose in eo quod quale Imperii jus expectat arrogaturusque sibi sit, jam nunc videtur praemonstrare. Quare quicquid inde

mali eveniat, vel evenire posse praetendi potuit ab illis qui in Aula Principis omne peccatum meum interpretationibus et scholiis suis inflammare parati sunt, id omne cum meo summo dedecore ineptiae et vanae gloriae meae imputabitur. Secundo hoc titulo reditus meus in patriam, si me quando redeundi voluntas ceperit, praeclusus est, nec cur redire non velim si liceat quomodocunque pacatâ Angliâ non video; non sum enim Praeceptor Principis Walliae, nec omnino domesticus (quae causa tertia est quare nollem titulum illum subscribi) sed qualis quilibet eorum qui docent in mensem. Itaque mentitum me esse dicent prae ambitione qui mihi male volunt; sunt ii non pauci. Doleo ergo tot exemplaria jam emissa divenditaque esse. Sed quia id corrigi non potest, demus quaeso operam ut ab iis exemplaribus quae apud Elzevirios reliqua sunt, effigies vel inscriptio, mallem utraque, quamprimum tollatur, idque priusquam ulla in Angliam transmittantur. Hoc ab Elzeviriis vel prece vel pretio impetrandum est, pretio si videbitur libr minoris venalem fore sublata imagine vel inscriptione, quod non credo, sed tamen pretio si necesse est. Agam interea hic cum Petito bibliopola ut eam tollat ex suis si quae habuerit (nondum enim allati sunt 21 illi libri quos scribis esse in sarcinis Elzevirianis, neque venit ille cui tradideras librum compactum), et scribam ad bibliopolam quendam Londinensem amicum meum, ut idem fieri curet, si quae istic exemplaria venalia esse contigerit. D. Brunonis benevolentiam gratissime amplector, neque in votis quicquam magis habeo quam ut officio meo officia ejus mereri possim; tamen hoc tempore nullos versus libro praeponi volo quos non ante viderim, tum ne, quod animo et ingenio factum est bono, temporibus fiat mihi non bonum, tum etiam ne aviditas gloriae illius in testimonium ducatur, tanquam etiam indebitum illum titulum cupiverim Praeceptoris Principis. Non est in toto hoc negotio quod meâ culpâ admissum est cui status rerum nostrarum minime cognitus erat. Est quod a te corrigi possit, et propterea quod te oro obsecroque, nimirum id quod dixi ante, ut quamprimum hanc acceperis epistolam, Elzevirium Lugdunensem convenire velis, atque impetrare primum ab eo ut ex illis quae ipse habet exemplaribus effigiem tollat, deinde per eum ut frater ejus qui est Amstelodami, idem faciat, vel si quo alio modo desiderium meum hac in re adimplere possis ut id facere velis. Molesta est haec epistola propter materiam, non faciam ergo ut molesta quoque sit prolixitate. Nihil addo nisi ut valeas, meque adhuc, ac nunc quum maxime opus est, ames. Tui amantissimus Thomas Hobbes. Parisiis 22 Martii 1647. Mersennus et omnes amici nostri permagni dicunt interesse et mei et Principis Walliae ut inscriptio vel potius tota effigies tollatur. Si ut fiat opus sit pecunia non nimis magna, solvam libenter. Iterumque vale.

The eighth letter gives particulars of the illness that nearly carried Hobbes off in the autumn of 1647. The edition of the *De Cive* had gone off in a very few months, and Elzevir was now pressing for another. As to other work with which Hobbes was occupied, and which he had apparently been too much excited about the unlucky inscription of the portrait to refer to in letter 7th, it is to be noted that he speaks in the 8th, and, eighteen months later, in letter 9th, of the *De Corpore* only. There is no word anywhere of *Leviathan*, which, from 1646, was uppermost with him till 1651.

VIII. Eruditissimo praestantissimoque viro Samueli Sorberio Thomas Hobbes S. P. D.

Literas tuas datas quarto die Octobris accepi hebdomade proxime

superiore. In qua quoniam libri mei editionem alteram Elzevirium cogitare scribis, ecce mitto tibi inclusum in hac epistola folium in quo quid mutatum esse vellem annotavi. Nihil autem in eo folio continetur praeter errata quaedam prioris impressionis, non enim habeo quicquam quod addam aut demam. Aliam partem Philosophiae Elementorum nondum paratam ullam habeo; nam circa medium mensem Augusti in febrem incidi gravissimam et continuam, ita ut non modo corpore aeger, sed etiam mente laesus, neque amicos qui me visebant, lecto astantes recognoscere potui. Febris ea in lecto me detinuit per hebdomadas sex, postea abiens erupit in apostemata quae hebdomadas quatuor alteras lecto me affixerant, postremo sanatis apostematibus supervenit ischiadica eaque maximis cum doloribus. Nunc autem aliquanto me tractat mitius, sinitque ut animum ad amicorum res convertam aliquando. Per tempora morbi priora accepi a te epistolam unam in qua involuta erat altera ad D. du Prat quam (ubi coepi paulum a febri et delirio respirare) dedi cuidam ex amicis meis Parisiis ferendam dandamque tabellario publico. Nisi morbus intervenisset, perfecissem, credo, partem philosophiae primam quae est de Corpore; ut autem nunc se res habet, eam partem circa festum Penticostes expectare poteris; nihil est quo amplius te detineam, cum valetudine, et perge me amare. Datum Germani 27 Novembr. 1647.

IX. Duplici gaudio me affecit (ornatissime Sorberi) amicus tuus dominus Guatelier, qui et te salvum esse nuntiavit, et mihi a te salutem dixit. Ego tibi rescribo imprimis vota mea, ut bene valere laetus vivere et mihi bene velle perseveres; deinde, si tanti est, curas meas, id est studia philosophica quae tu aliique amici mei et voce flagitant et silentio interdum videntur flagitare.

Quantum cura valetudinis, et erga amicos quos hic habeo praesentes officiorum meorum ratio, sinit, tantum operae scriptioni impertio, scriptioni inquam, non enim iam quaerendae sed explicandae demonstrandaeque veritatis labor editionem moratur. Puderet me tantae tarditatis nisi certus essem rationem ejus in ipso opere satis constitutam esse. Veruntamen non ita longe abesse videor a fine primae partis (quae et maxima est et speculationis quam ceterae partis profundioris), ut non possim (Deo favente) eo pervenire ante exactam hanc aestatem. Interea tabulis aeneis figuras quibus utor in demonstrationibus meis, quotidie incidi curo, ut simulac scribere desierim, omnia praelo parata sint. Accipio quandoque literas ab amico nostro Domino Martello, et accepi nuper; degit plerumque, credo, Buldigalae. Bene valet et me amat. Tu quoque vale (optime Sorberi) et me ama. Tui amantissimus, Thomas Hobbes. Parisiis Junio 14. 1649.

Leaving aside the remaining eight letters (from 1656) as unimportant, it should be added, with reference to Dr. Tönnies's interesting discussion of the circumstances and motives of Hobbes's return in 1651, that the conjecture he (at a distance) hazards as to the beautiful MS. of *Leviathan* in the British Museum—*viz.*, that, as being presented to the young king Charles II., it would hardly contain the bold "Review and Conclusion" of the printed work—is not correct. This epilogue, for all its outspoken independence, duly figures at the end of the MS.; and Clarendon, who describes the presentation-copy as "engrossed in vellum in a marvellous fair hand," must be left to settle with himself (and with the others who took the idea from him) how, if Hobbes wrote "The Review, &c.," in order to curry favour with Cromwell, he could be so rash and so rude as to thrust it into the hands of the exiled prince.

EDITOR.

THE ARISTOTELIAN SOCIETY FOR THE SYSTEMATIC STUDY OF PHILOSOPHY (22, Albermarle Street, W.).—Since last record the proceedings have been as follows: Dec. 16, 1889, Symposium, "Is there Evidence of Design in Nature?" the papers contributed by Mr. S. Alexander, Dr. Gildea, and Mr. G. J. Romanes, F.R.S. Jan. 6, 1890, Mr. R. E. Mitcheson on "Practical Certainty the highest Certainty". Jan. 20, The President on "Universals in Logic". Feb. 3, Mr. D. G. Ritchie on "The Conception of Sovereignty". Feb. 17, Mr. J. S. Mann on "The Distinction between Society and the State". March 3, Mr. G. F. Stout on "Association Controversies". March 17, Symposium, "The Relation of the Fine Arts to one another," the papers contributed by Messrs. B. Bosanquet, E. Wake Cook, and D. G. Ritchie. March 31, Mr. H. W. Blunt on "The Philosophy of Herbert of Cherbury". April 14, The Rev. P. N. Waggett on "Beauty". April 28, Mr. P. Daphne on "Card. Newman's *Grammar of Assent*". May 12, The President on "The Ego". June 2, Symposium, "Is the Distinction of Feeling, Cognition, and Conation valid as an ultimate Distinction of the Mental Functions?" the papers contributed by Professor Bain, Professor Brough, and Mr. G. F. Stout. A discussion followed on every occasion.

Messrs. T. & T. Clark of Edinburgh hope to begin in the autumn the publication of a quarterly *Critical Review of Current Theological and Philosophical Literature*, to be edited by the Rev. Prof. S. D. F. Salmond. The new journal will also take account of other literature so far as bearing on religious and theological questions. The reviewers will be "scholars of recognised ability representing different lines of study and different branches of the Evangelical Church".

Among other series of publications, the University of Pennsylvania has begun a philosophical one under the editorship of Profs. G. S. Fullerton and J. McK. Cattell. No. 1, dated April, has just come to hand, with the title *On Sameness and Identity. A Psychological Study: Being a Contribution to the foundation of a Theory of Knowledge*, by Prof. Fullerton. No. 2 (in preparation) will be *Studies from the Laboratory of Experimental Psychology*, by Prof. Cattell.

Prof. Delboeuf of Liège has just added to his remarkable memoir, *De l'origine des effets curatifs de l'Hypnotisme* (see MIND xiii. 148), another, *De l'étendue de l'action curative de l'Hypnotisme* (Paris, Alcan, pp. 32). In this he gives careful account of the marked improvement of vision which (aided in his observations by two medical colleagues) he has been able to effect through hypnotic suggestion in a patient suffering from severe morbid affection of the retina. The result strongly confirms him in his view that hypnotism, so far from depressing, rather exalts volition: while the life of relation is for the time more or less in abeyance, the 'subject' may recover control of organic processes that in normal circumstances have become automatic. The new memoir displays all the author's well-known scientific force. There is room left here only for bare mention of a somewhat earlier brochure, *Magnétiseurs et Médecins* (Paris, Alcan, pp. 114), in which he defends, with his whole soul, the cause (as he understands it) of intellectual freedom against the French and other medical authorities who are for putting down public representations of hypnotism. In Prof. Delboeuf's view, we owe our present knowledge of hypnotism to the public 'magnetisers' more than to all the doctors (who would now appropriate the subject) put together; and while the gain from the knowledge is certain, its possible dangers are easily obviated.